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ABSTRACT

The development of indicators of the price of tuition, room, and board at U.S. colleges during academic years 1972-1973 through 1979-1980 is discussed. Attention is directed to purposes and premises of the indicators, basic concepts of price and student expenses, major implications and indications evaluated during 1972-1980, and future research and potential applications of the findings. Different methodologies for studying price changes as they might be applied to expenses facing the student are examined, especially the Laspeyres-type index, whose methodology is comparable to the Consumer Price Index, The Higher Education Price Index, and other price series. Tuition trends at lower-priced and higher-priced institutions are also examined. Additional areas of analysis include: differences between public and private institutions in room and board charges, regional pricing differences, and other student expenditures (books and supplies, personal, and transportation). Average tuition per student are presented for the following categories of institutions: major research, other doctoral, other four-year institutions, professional and specialized institutions, and two-year institutions. A bibliography is appended. (SW)

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Higher-Education Indicators: Tuition, Room, and Board

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1981

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Abstract

Higher-Education Indicators: Tuition, Room and Board has been developed by the National Center for Higher Education Management Systems (NCHEMS). The Higher-Education Indicators project is a long-range endeavor that will develop as many as 20 indicators, providing a better understanding of current status and trends in higher education. Data abound, both about institutions and the higher-education enterprise generally, but often are not used in decisionmaking. Potential users may be unaware of their existence, or the data may be presented in forms not useful to policymaking. Properly structured, indicators are one means for making sorely-needed information widely available.

This report documents the development of one such indicator, covering:

- Purposes and premises of indicators of tuition, room and board
- Basic concepts of price and student expenses used in this series
- Major implications and indications of this series evaluated from 1972 to 1980
- Discussion of future research and potential applications of these findings

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1. Introduction

This book describes the development of indicators of the price of tuition, room, and board (PTRB) at American colleges and universities for eight years, beginning with academic year 1972-73, and considers some of their implications. This indicator series is intended to (1) contribute to rational discussion of the economic well-being of students and their families; (2) provide one dimension useful in evaluating the effects of trends in financial aid and student income; (3) capsule the effects of changing enrollment patterns (particularly the increasing enrollments at two-year institutions) upon average prices faced by the student; and (4) contrast the various pricing structures associated with different types of higher-education institutions.

A. Highlights

At policy levels, PTRB indicators have implications for financial-aid decisions and issues associated with access and opportunity, and shed light on pricing behaviors. However, they provide only beginning points for policy analysis. They will have highly variable significance, depending on the context of use, and their informational value will be constrained by difficulties in interpretation. The PTRB indicators for the years 1972-73 through 1979-80 certainly affirm what perhaps no one has doubted--that the price has been going up. They confirm also the general impression that private-college tuition is increasing more rapidly than public-college tuition. And they make available new information on regional variations in tuition.

As we will explore in some detail in chapter 3, the indicators track a persistent, though not uniform, increase in prices at all types of colleges and universities across these years. PTRB indicators demonstrate that the tuition gap is large--and widening. In 1972-73, the average price paid by students was $539 at public institutions and $1,953 at private institutions. In the next seven years, the average private-college tuition increased 65

percent to $3,213, while public-college tuition increased 47 percent to $794. In other words, students attending private institutions paid tuition prices in the fall of 1979 that averaged $1,260 above prices in 1972, or four times the price to their public-institution peers.

The rate of tuition increase among private institutions was greater than among public institutions, but not disproportionate to price movement in other areas of the economy. In recent years, as shown in figure 1, the rate of tuition-price increase in private institutions has been remarkably consistent with the movement of the Consumer Price Index. Moreover, it has been notably similar to the trend in higher-education purchasing or resource costs (as measured by the Higher Education Price Index). Although tuition increases at public institutions have lagged noticeably behind price increases in the general economy, since 1975 these rates have paralleled increases in higher-education purchasing costs. In other words, increases in tuition price in both the private and public sectors appear to have been driven by institutional costs, and now are keeping pace with general inflation.

There are wide variations in pricing among the colleges and universities examined here, however. Public tuition ranged from zero to $1,565 in 1972-73 and from zero to $2,216 in 1979-80. Similarly, private tuition ranged from zero to $3,975 in 1972-73 and from zero to $6,590 in 1979-80. Even among the major research universities, perhaps the most homogeneous grouping examined here, the range was wide. Tuition prices among the 51 public major research universities ranged from $233 to $1,200 in 1972-73 and from $438 to $2,216 in 1979-80. The range of these prices among the 25 private major research universities was from $2,245 to $3,099 in 1972-73, and from $3,301 to $5,745 in 1979-80. Furthermore, the manner in which these prices rose differed greatly among institutions. For example, while the average tuition price for two-year institutions is lower than that for four-year institutions, the rates of price increase among both public and private two-year institutions did not lag behind those of their four-year counterparts. In fact, public comprehensive two-year institutions--the largest subgroup of two-year public institutions--increased tuition prices at rates that

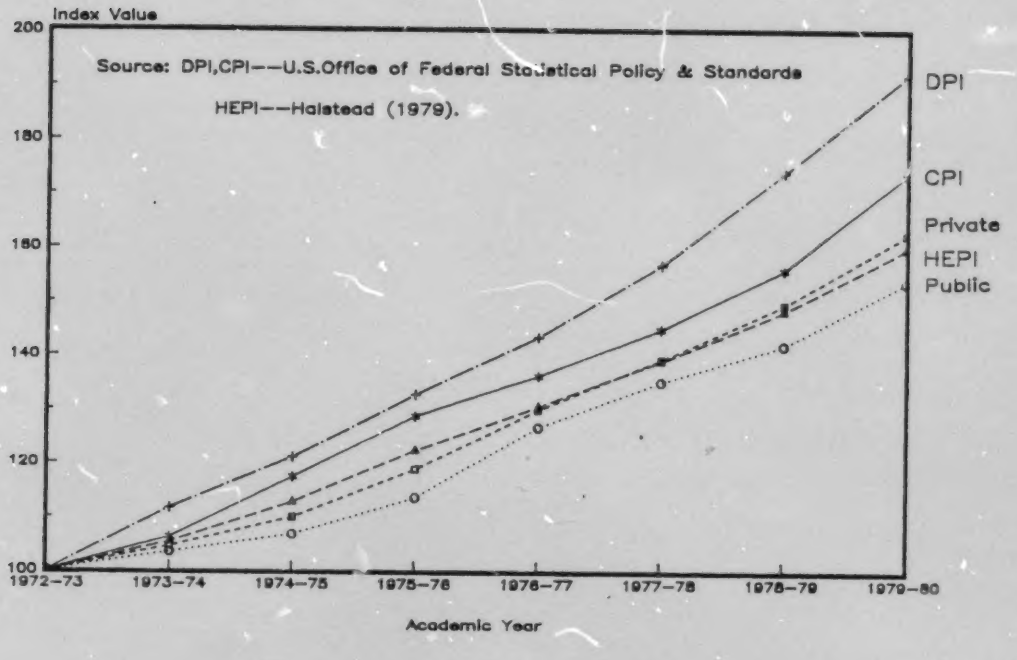

Fig. 1. A comparison of tuition price movements for public and private institutions with Consumer Price Index (CPI), disposable personal income (DPI), and Higher Education Price Index (HEPI)

exceeded all but those of public professional and specialized schools. Similarly, private two-year vocational and technical schools--the largest private two-year subgroup--maintained price-increase rates that were greater than those of all but private major research universities. This finding corresponds well with the fact that lower-priced institutions generally have increased tuition prices at rates substantially above the rates of increase for higher-priced institutions. The 451 public institutions charging $200 or less for in-state tuition during the 1972-73 academic year had increased prices by 139 percent by 1979-80, in contrast to the average increase of 52 percent for in-state tuition at public institutions generally; for the 669 private institutions charging $1,000 or less in tuition for the academic year 1972-73, prices rose by 90 percent, in contrast to the average private-tuition increase of 65 percent from 1972-73 to 1979-80.

Regional pricing differences are apparent in the PTRB indicators. Average tuition at North Atlantic public institutions increased more rapidly than that of public institutions elsewhere in the country. Furthermore, the dollar amount of these increases was larger, with average tuition increasing from $603 in 1972-73 to $1,042 in 1979-80. Interestingly, this area contains fewer public (312) and more private (619) institutions than any of the other three regions. Among private institutions, regional differences in pricing were less pronounced; the West/Southwest region increased the most--78 percent from 1972-73 to 1979-80. (Private institutions are most sparsely represented in the West/Southwest region [291], while public institutions are most densely concentrated [438].) However, the North Atlantic and the Great Lakes/Plains regions remained the price leaders in absolute dollars, with average tuition prices of $1,042 and $939 in 1979.

Finally, we find that the price of room and board contributed slightly to the gap in prices between public and private institutions. In 1972-73, these charges were slightly higher in private institutions than in public institutions--$1,124 versus $1,018. Thereafter, these charges increased at a slightly faster rate in private institutions: 57 percent versus

51 percent over the period. In both sectors, however, these increases lagged significantly behind increases in the prices of rent and food at home, which rose by 78 percent from 1972 to 1979. Moreover, while students in the private sector paid tuition prices four times as high as at public institutions, students at private institutions were charged combined prices for tuition, room, and board only twice as high as those charged students at public institutions.

B. Factors Affecting Interpretation

Routine cautions apply: these indicators should be used only in appropriate contexts, and then with judicious conservatism. What they indicate in various contexts of use may be conditioned by the availability of financial aid, inflation, the influence of price on student decisions, and the extent to which various institutions depend on tuition as a source of revenue. Only in these several and variable lights can trustworthy inferences be drawn.

It is generally supposed that rises in PTRB have been offset by increases in financial aid. We present evidence in chapter 3, however, that this is not necessarily so. It may be that expansions in the availability of financial aid triggered some price increases. Whatever the relationship between PTRB and financial aid, the latter has not solved student problems with college financing.

Inflation may be the most protean of the factors conditioning the implications of the PTRB indicators. As inflation increases the cost of raising children, a family whose income does not keep pace will have to allot a larger proportion of the budget to current expenses and perhaps a lesser proportion for college costs. Changes in family structure have brought about new problems: the number of single-parent families has increased at a time when more and more families have found it necessary for both parents to work in order to make ends meet; in many families, two and even three children are of college-going age at the same time.

There are indications that students regard the difference in price between public and private institutions as significant enough to affect their choice. The low price of two-year institutions has made them particularly attractive to less affluent students, despite the fact that prices at two-year institutions are rising faster than at other types of schools.

Finally, public institutions seem to be lessening their dependence on tuition as a revenue source and increasing their dependence on state appropriations. Nonetheless, institutions that depend heavily on low- and middle-income students might be jeopardized by significant restrictions on the availability of financial aid. Each of these factors is discussed in some detail in appropriate places.

C. Limitations

PTRB indicators are but one of a series of indicators being developed by NCHEMS. Each indicator, like the PTRB, will monitor trends exhibited in a single facet of higher education. Together, they will portray the student (with respect to financing, participation, persistence, attainment, and so forth), the institution (resources, research capacity, governance, diversity), and the environment (demographics, attitudes toward higher education). Such indicators consist of simple measures that map the progress of trends over time and are intelligible to a large audience, including legislators and voters. This simplicity belies the complexity inherent in almost any phenomenon in higher education. Indicators of the price of tuition, room, and board are no exception. They simply measure changes in these prices over time. To the degree that seems reasonable, we have sought in a very general way to relate these changes to other trends in higher education, such as participation, income, and other prices. We do not, however, explore the underlying reasons for changes in these prices, nor do we seek to determine the impact of these prices upon the student or the institutions. The contributions, then, that PTRB indicators can make to the study of policy questions confronting higher education are accompanied by sensible restraints on their use. It is inadequate and inappropriate to study pricing in isolation from other phenomena in higher

education. A comprehensive context should embrace such factors as the ways in which families finance education, the tensions caused by changes in the social value placed on higher education, revised government priorities, financial aid, and institutional revenues. PTRB indicators are but a first step toward understanding the significance of the price trends in higher education.

In developing indicators of tuition, room, and board, initial emphasis was placed on the generation of descriptive data about price trends. Such information provides a clear picture of where prices were before, are now, and are likely to be in the future. These data can be of use for planning at various levels. However, any projection of price movement should be regarded as only speculative, derived from informed judgment and historical data rather than empirical evidence. Therefore, and at present, these indicators should <u>not</u> be viewed as either alarming or reassuring. Such conclusions await a better base of knowledge about causal and policy factors related to price movements for different types of institutions. Furthermore, policy-driven dimensions of higher education, such as tuition price, may elude empirical or predictive constructs. Averages cannot capture the kind of information necessary to characterize or substantiate behavior.

In light of the data available to us, we have chosen to use two methodologies: (1) a 1979-enrollment-weighted price that examines list-price movement in isolation from changing enrollment patterns, and (2) a moving average, which measures average prices charged students from year to year. No methodology is without flaw, however; nor is there sufficient evidence to conclude that any one measure is more appropriate than others for examining prices faced by the student. In PTRB indicators, several methodological limitations exist. First, any changes in the quality of education that may account for rising prices are undetected in this series. So too, price differences among institutions that may in part be a function of the differences in quality are not measured by the data in this series. Second, there is neither a typical institution nor a typical student. The averages portrayed here obscure the

individual student's experience and the distinctiveness of specific institutions. Third, this indicator series measures list price, a concept substantively different from both the actual cost of education to the student and the cost to the institution of providing this education. Finally, the use of a 1979-enrollment-weighted average is akin to the underlying methodology and purposes of the Consumer Price Index (that is, measurement of price change based on a 1968 market basket and unaffiliated with other changes, such as purchasing or populations). Nonetheless, the difference in weighting years makes comparisons between these two methodologies indicative rather than conclusive evidence of parallel trends.

Serious limitations must be placed on the application of consumer theory to higher education. Assumptions of preference and consumerism lose credibility in light of the general lack of information provided to prospective students (Lenning and Cooper 1978), imprecise student goals, and the absence of a well-defined market for higher education. While the purchase of higher education is not comparable to impulse buying, it may still be distinct from such decisions as the allocation of family income to staple goods and services. Further, utility and realized return on investment in education may not be as readily measurable as the results of other consumer investments and purchases. For these reasons, caution should be exercised in linking the price changes charted in this report to behavior, whether on the part of students or institutions.

Several limitations are inherent in the scope and nature of the data base employed. The data base constructed to generate these indicators is drawn from the Higher Education General Information Survey (HEGIS), conducted annually by the National Center for Education Statistics (NCES). HEGIS information is collected from nearly 3,200 institutions of higher education. Although substantial efforts were made to correct faulty data, particularly regarding tuition, some data errors remain. Only those reporting errors that could be easily detected (such as a reduction in prices, missing data, or a large increase) were identified. Typical errors have included sporadic reports of required fees, out-of-district rather than out-of-state tuition

reports, per-semester or quarter rather than academic-year reports, and transposed numbers. Corrections were obtained from state coordinating commissions, institutions, or other published reports (including catalogs, state reports, College Board publications, and other higher-education sources). Where data were missing and could not be supplied from other sources, we assumed that the average of adjacent (preceding and following) years would constitute a reasonable substitute for missing figures. Constraints on use of this particular data base should be noted: (1) the lack of information about prices of other student purchases beyond tuition and room and board on campus impedes a complete examination of student expenses; (2) the absence of data about changes in the numbers of students living on campus required the assumption that these trends were constant and a function of enrollment; (3) the behavior of fees assessed and reported with tuition is erratic; (4) the infrequency with which data on student migration are collected demanded the assumption that out-of-state enrollment patterns were a function of total enrollment, based on 1979 observations; and (5) the absence of state residency data for students other than freshmen and transfer students led to the assumption that student-residency traits were consistent across all undergraduate levels, slightly inflating public tuitions included in this study. Prices are traced from 1972-73 through 1979-80. Historical data about price trends prior to 1972 would be a valuable addition if data quality from these years could be assured. 1980-81 data, and data from years thereafter, will be included in PTRB indicators as they become available.

2. Methodology

A. Concepts of College-Going Prices

At the outset, it is useful to discuss alternative definitions and concepts of college-going prices and costs. One concept is the price associated with one academic year of higher education (the total of tuition, required fees, room and board, and other goods and services) regardless of who (the institution, the individual, the government, private source) actually pays this price. A second concept is the cost to the individual--total price less any grants, fellowships, gifts, or such awarded the student to defray outlays. Finally, there is the total cost to the student of obtaining higher education--what the individual pays to obtain higher education, plus foregone earnings (opportunity costs). Thus indicators of the Price of Tuition, Room, and Board (PTRB), while reflecting the major components of average total price, will do no more than indicate an upper limit for the average out-of-pocket cost for the individual of a year of college. Indicators of student financing will present the other side of this balance sheet, how and by whom these prices are met.

Treating price and financing as related yet independent is justified because the price of obtaining a college education is rarely paid wholly by the student from personal funds. Typically, financial aid, student earnings, and family contributions are the principal sources that combine to meet the price established by the institution. Finally, foregone earnings--an element of the third concept described above--represent the single largest expense, as it were, of obtaining higher education, and therefore must be considered instrumental in shaping the decision to purchase higher education. Crary and Leslie (1978) estimated foregone earnings to be $2,519 and $3,176 for 1972 freshmen and 1973 sophomores, respectively--somewhat below estimates of earlier researchers. However, the rapid rise in personal income and wages since that time enhances the importance of foregone earnings. By the end of 1980, personal disposable income per capita had risen by 111 percent over average 1972 observations; wages of production and nonsupervisory workers had risen by 82 percent (U.S. Office of Federal

Statistical Policy and Standards 1980). Given the importance of this fact in deciding whether to attend college, foregone earnings are one of the measures used to construct indicators of student participation.

To understand the functions and intended uses of indicators of the PTRB, four basic concepts of price movement must be considered: product, product price, quantity of product purchased, and time over which prices are evaluated. Many methods are available to measure each of these dimensions, either separately or in combination.

Product

The product is the good or service for which the buyer pays the seller a price mutually agreed upon. Ideally, the product is carefully defined to exclude any additional goods or services that the seller may provide in order to facilitate or make attractive the purchase. In this series, the price-and-purchase measures are those associated with one academic year of full-time undergraduate education. This basic specification is complicated by difficulty in determining exactly what the student is purchasing. Preferably, the measurement of these products over time would be constant--that is, a year of higher education a decade ago would be comparable to a year of higher education today. Ostensibly, for example, comparison of shelter and sustenance provided to a student from year to year is reasonable. But a key assumption must be that room and board provided in 1972-73 (the initial year considered in this series) is essentially the same as that provided in each subsequent year--or, at a minimum, that the student receives the same satisfaction from these services. Unfortunately, there is virtually no information to substantiate such an assumption. Any change in the standard of living provided (such as more elaborate services provided by the institution), the nutrition or amount of food provided, or the facilities (for example, more dormitory privacy) would mean that the product or service whose price is being examined is not the same over time. The incidence and extent of such changes are unknown.

Price

In its simplest conception, price is the amount paid for a specific product. With respect to higher education, it is useful to examine three types: list price, negotiated price, and net price. List price is the advertised or otherwise stated price of a product; it does not include discounts, rebates, or other adjustments that the seller may provide to encourage purchase. Nor does the list price reflect any taxes, service fees or penalty costs that may be added to the list price by the seller, the government, or other entity empowered to participate in the sales transaction. With respect to indicators of the PTRB, list prices are those advertised by an institution for tuition (including required fees) and room and board.

Negotiated price is the list price less rebates, discounts, or other adjustments made by the seller. In higher education, this price would be akin to tuition less waivers, remissions, and financial aid provided by the institution. As noted by Wynn (1972), an institution may have scores of different pricing packages for providing financial aid and other discounts to students. In this manner, financial aid reduces the cost to the student, although the money seldom passes through the student's hands. From an institutional perspective, however, this notion is important to the calculation of actual income derived from tuition. For example, the institution must determine to what extent increases in tuition actually net an added return--since increases in list tuition often require parallel increases in institutionally subsidized financial assistance, and also may reduce enrollment.

Finally, net price is the amount that the student actually pays the institution out of earnings, savings, or family income. In short, net price is the negotiated price less noninstitutional scholarships, government educational benefits, employer-provided educational subsidies, and contributions from other sources (excepting the institution or the student's family).

As we have said, indicators of student financing, in conjunction with indicators of the PTRB, will provide greater insight into the negotiated and net price of higher education. The PTRB indicators examine only list, or advertised, price.

Quantity of the Product

The quantity of the product is the number of commodity units purchased. In the case of goods (as opposed to services), the measurement represents the number of discrete units of a product purchased. Services obviously are less conducive to such measurement. The quantity of product that the student purchases is not specified in units of education, housing, or food. For present purposes, we assume that the student buys one academic year of higher education and housing and a certain number of meals during the academic year. Under the best of circumstances, we would measure this in credit hours, square feet of dormitory space allotted the student, contents of meals, and so forth. This is precluded by the limitations of existing data. Certain assumptions about the quantity of transportation, clothing, books, and other personal expenses also must be made if we are to fully portray the economic circumstances of students. As a practical measure, we employ student budgets regarding these other purchases reported to the College Board by institutional financial-aid officers. We assume, then, that all students purchase approximately the same things, in the same quantities. In fact, these purchases vary with student living arrangements (dorms, off-campus housing, with family), student marital and family status, age, income, preferences, and such. In the absence of data other than that collected by the College Board, examination of expenses other than tuition, room, and board at a student level is precluded. Instead, we provide here average institutional observations for these other purchases (books and supplies, transportation, and personal expenses). This strategy prevents accurate combination of these other-expense data with measures of tuition, room, and board reported here.

Time Frame

The time frame represents the period over which prices are evaluated; it is necessary to capture movements or fluctuations in prices within a specific interval. Without the time frame, prices portray little more than a snapshot of relative prices. The time frame links these snapshots into a cohesive set of price movements. For the purposes of this series, the time frame must be divided into academic years, since tuition and room and board charges are established on an annual basis. The time frame examined in this report includes the academic years from 1972-73 through 1979-80. The interval will be extended over time as data become available.

The intersections of these dimensions provide a measure of price movement, preference, and product specifications. For analytical purposes, however, it is useful to examine each separately--for example, stabilizing preference and product specification while examining the movement of price, or stabilizing price and product specification while examining consumer preference. This allows careful evaluation of a single phenomenon unconfused by other variations in the system.

B. Price Change

After much study, we adopted two methodologies: (1) a Laspeyres-type price index and (2) a moving average. Laspeyres indexes control for nonprice changes that influence average observations--that is, changing purchasing patterns (such as a rapid growth in two-year enrollments that influences prices faced by the average student). A moving average, on the other hand, does not control for changing enrollment patterns that may influence the average price faced by students.

The Quality-Price Issue

Aside from aberrant pricing policies (for example, collusive behavior among producers, government controls), typical reasons for price changes are: (1) changes in the cost of production and resources, (2) changes in the demand or supply (caused by shortages or surpluses), and (3) changes in the quality of the product (for example, increased longevity, changes in performance, reduced service requirements). Although the first and second have implications for the price of education, the last--change in quality--has the most significant yet least measurable impact, particularly on tuition pricing in higher education. Waiving for the moment Nerlove's (1972) contention that tuition is not an "economic" price, pivotal concerns in a discussion of student prices are then two aspects of price change: (1) changes in price due to improvement (deterioration) in quality, and (2) inflation in price (unrelated to quality change or innovation). As Jenny (1977, p. 1) has emphasized: "In an age of inflation, we ought to know the difference between true inflation (ever higher prices for the same thing) and cost increases that embody quality change."

To measure a pure inflation effect, certain adjustments for specification changes or quality-price changes (such as the parallel construction of hedonic indexes) may be made to correct for improvement or deterioration in quality. It is argued, however, that regardless of what causes the change in price (changes in quality, inflation, supply), the consumer still has to pay the difference. This circumstance is magnified in higher education where the student, unlike the used-car buyer, does not have the option to purchase a 1972 year of education in 1980. Nevertheless, price changes associated with better quality in higher education are important, and the need to determine measures of quality-price change is well documented (Jenny 1979; O'Neill 1971).

The relationship between changes in quality and changes in price in higher education is hard to establish, however. Numerous dimensions have been posited as having some relationship to quality of education. These include faculty-to-student ratios (Carlson 1972; Radner 1976),

application-to-admission ratios (Weathersby 1976a), number of doctoral degrees awarded, test scores, beginning salaries and status of placement for new graduates (Weathersby 1976b), diversity of program offerings, and course content. Although these features may directly affect the level of tuition, it is not clear that changes in these dimensions have any discernible relationship to changes in price. For example, improvement in test scores or salaries of new graduates exhibit no direct relationship to tuition charges. Furthermore, an increase in faculty-to-student ratios may have little impact upon the caliber of education outcomes (Blaug 1968; Kershaw 1969; Carnegie Commission 1972), and improved outcomes may be equally a function of the upgraded skills and abilities of incoming students (Jenny 1979). Changes in the quality of institutional purchases can be used as a proxy measure of quality improvement if a relationship between higher education and inputs is identified (Halstead 1975). For example, William Bowen (1969) has observed that as much as one-third of the increase in cost per student can be linked to a more valuable educational outcome. On the other hand, Smith (1971, p. 24) characterizes the relationship as "loose and tenuous." O'Neill, having acknowledged costs of inputs as the "most accessible route to measuring quality change" (1976, p. 352), had previously stated: "We do not know how well cost differences will reflect quality differences in the setting of a nonprofit system with varying combinations of private philanthropy and public subsidy. Producer incentives may well change in such a market and this could affect resource use or misuse" (1971, p. 5). This technique is further complicated by the wide cost variances among institutions similar in caliber and circumstance (Weathersby 1976b, p. 124). Unlike most consumer prices, then, tuition cannot be evaluated vis-a-vis the desirability or value of the product being purchased by the prospective student (Nerlove 1972). In fact, the peculiar way in which higher education is financed precludes taking tuition as a measure of the quality of the product being purchased (O'Neill 1971). For example, peer institutions may provide very similar products, but charge very different tuitions. This circumstance supports Nerlove's contention that tuition is not an economic price--that is, a market mechanism by which to allocate scarce resources.

Clearly, the calculation of quality-price change for services such as higher education is far more complex than for goods that can be described in terms of components, specifications, or durability (Griliches 1961). In light of the controversy still surrounding the notion of quality and the measurement of inflation even with respect to national economic indicators such as the Consumer Price Index (Mitchell 1980; Triplett 1980), it is unlikely that the measurement of quality change in higher education is a currently accessible goal. Using the Consumer Price Index as an example, quality improvements not associated with price change--as in products that last longer but do not cost more, such as tires (Howard 1980)--are not captured; substitution effects (buying cheaper products with similar purposes) caused by inflation are not measured (Mitchell 1980); and changes in consumption such as energy conservation are not well addressed (Howard 1980). We thus assume that the quality of higher education remained unchanged during the period in which we are examining price movements. We recognize, nonetheless, that improvements or deteriorations in quality may have occurred; indeed, if the time frame is extended, we are forced to acknowledge large but not readily measurable changes in the quality of American higher education.

Predicting Price Change

It is clear that price increases (or decreases) occur for a variety of reasons--changes in the cost of labor, raw materials, components, or money; changes in supply or demand; technological improvements; and so forth. Certainly, inflation and the cost of resources generally are critical to tuition-price setting. However, the path or pattern of pricing in higher education is complicated. For the great majority of institutions, tuition does not cover the costs of providing education. Instead institutions depend upon other sources to underwrite the difference, and levels of funding provided by these sources are themselves difficult to predict. Beyond the obvious factor of inflation, price setting in institutions is based on several layers of policymaking, including government and private actions as well as institutional factors. In a single arena, changes in policy are not easily anticipated

because the parameters and interactions escape empirical description. The intersection of a variety of policies, such as tuition setting, then, is even more complicated. Rusk and Leslie (1978) show that, for example, tuition pricing at major state universities is highly correlated to both historic and economic circumstances. Further, they suggest that "there are indications that higher education tuition levels are increasingly vulnerable to economic and political forces" (p. 545). Certainly we can hazard a guess that tuition, as most prices, will continue to rise and that these price increases will depend in major part upon the price increases of resources--both human and other. However, we cannot forecast what institutional responses will be triggered by changes in state, federal, or other external conditions, because we cannot well predict what those external changes will be. At the individual institution these responses may be slow to materialize--for example, it is not uncommon for tuition at an individual institution to remain constant over several consecutive years despite increases in faculty salaries, resource requirements, or other inputs. Aggregation, then, of these varieties of behaviors, policies, and tuitions complicates sound forecasting of tuition movement.

Again, as Rusk and Leslie (1978) indicate:

> tuition prices appear largely to be the result of evolutionary rather than planning processes; that is, rather than develop tuition prices in conformance with an agreed-upon and openly debated state policy, states seem to have set and changed prices in incremental, unplanned fashion. This gives rise to the suspicion that this important public policy issue often has been decided on a "herd instinct" basis: the setting of tuition prices in conformance with prevailing and largely unexamined regional values and norms. Or, it may be posited that state governments have--again without explicit policy guidelines--directly manipulated prices through the appropriations process in order to maintain an implicit, agreed upon public/private and two-year/four-year tuition price relationship. In similarly unplanned and, one must fear, largely unexamined fashion, institutional aid appears to have been diverted to student aid, an occurrence that appears to have resulted in higher public university tuition. In sum, it would seem that, without policy planning, tuitions have been raised or held steady as believed necessary to achieve such ends as the assurance that private institutions are not priced out of existence, that state universities do not lose too much of their clientele to community colleges, and that the total public effort for higher education does not consume too much of the scarce public resources required for the many urgent public needs. [Pp. 544-45]

While the importance of predicting future tuition policies needs to be stressed, the complex relationships among the political and social environments, funding patterns, institutional costs, and tuition pricing demand a very different study than we have embarked upon here. While we thus endorse--indeed, strongly urge--such study, we make no attempt to predict the future prices the student may face.

Price-Change Measurement

The use of a Laspeyres price index in economics--most notably in the construction of the Consumer Price Index and the Producers' Price Index—is well established, and its application to higher-education prices is not new. Halstead (1975), Baughman (1979), and Wynn (1974) all employ index methodologies. Kent Halstead's work (1975) on the Higher Education Price Index (HEPI) and other price series is perhaps best known among these efforts. Thus the value of this approach is augmented by its methodological comparability to the Consumer Price Index, the Higher Education Price Index, and other price series.

Applied to the prices we examine here, the Laspeyres-type index is fundamentally:

$$p_i^L = \frac{\sum_{j=i}^{n} e_{j(1972)}\, p_{ij}}{\sum_{j=1}^{n} e_{j(1972)}\, p_{j(1972)}}$$

where:
i = 1972, 1973, . . ., 1979;
j = institution;
$e_{j(1972)}$ = enrollment in institution j during 1972;
p_{ij} = the price or cost paid by the student at institution j during year i;
n = number of institutions in the calculation.

The Laspeyres-type price index is built on a set of goods purchased during a base period. In monitoring price change, then, this same combination of goods, purchased in the same quantities, is measured over time. By holding enrollment constant, we can examine the price increases for an academic year of education. This base-year, enrollment-weighted index is suitable for our purpose, then, if we assume that patterns of enrollment and other student purchases have not changed significantly during the interval under consideration.

A serious complaint leveled against the use of a Laspeyres methodology, however, and exemplified in the development of the Consumer Price Index, has been the use of outmoded purchasing patterns as weights. In order to determine the potential for detrimental impact upon our findings over the long run, we compared the use of a 1972 enrollment weight with a 1979 enrollment weight. As figure 2 indicates, the overall differences were minute, suggesting that during the seventies at least, changes in enrollment patterns did not affect price measures. On the other hand, differences in specific institutional sectors are greater. The largest absolute difference occurs in the category of other public doctoral-granting institutions,[1] a $79 difference in 1979 findings between measures using a 1972 and a 1979 enrollment weight.

[1] Inclusion rules for this and other categories in the NCHEMS institutional taxonomy are provided in the section entitled Findings for Institutional Class, beginning on p. 67.

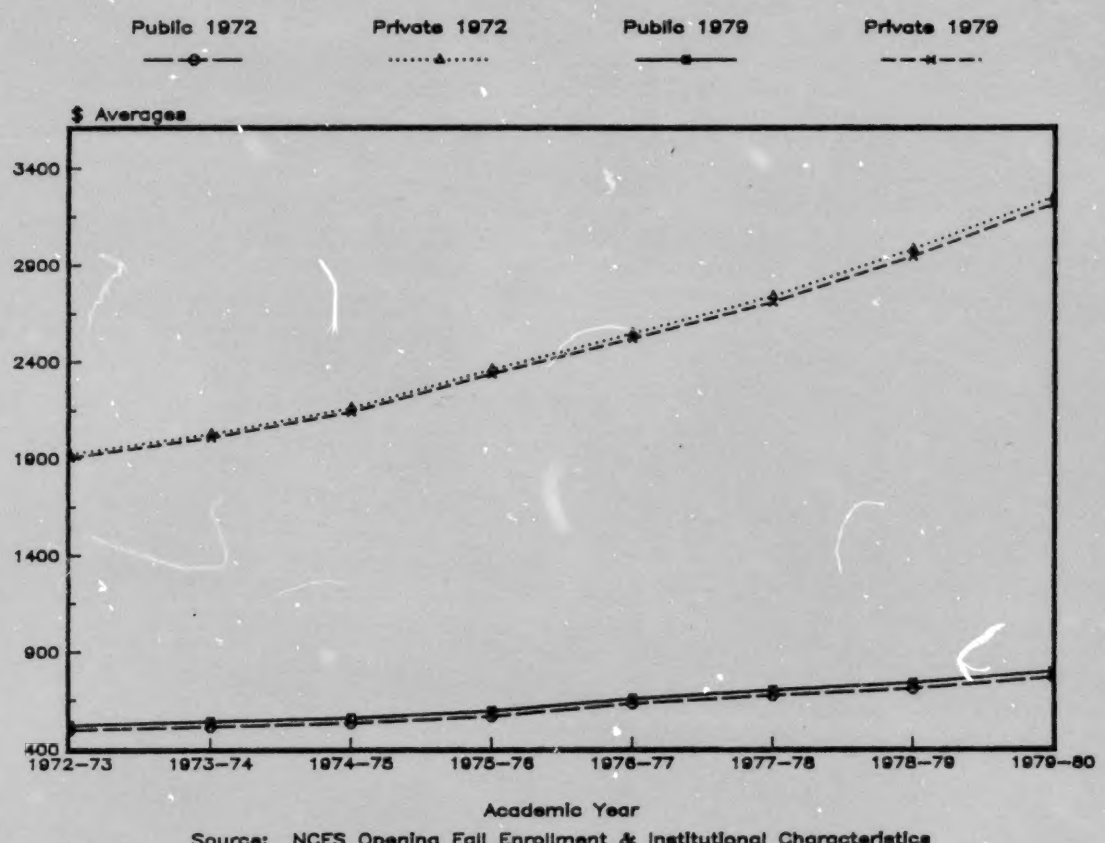

Fig. 2. Comparison of Laspeyres averages, 1972 and 1979 base-year enrollment weights

To more clearly demonstrate the implications of changing enrollment patterns upon prices, we have also elected to examine a moving average, based on the following formula:

$$A_i^{wa} = \frac{\sum_{j=1}^{n} (e_{ij}\, p_{ij})}{\sum_{j=1}^{n} e_{ij}}$$

where:

i = 1972, 1973, . . ., 1979;
j = institution;
p_{ij} = price or cost component under examination at institution j during year i;
e_{ij} = enrollment at institution j during year i;
n = number of institutions in the calculation.

This permits simultaneous study of prices and the influence of changing enrollments upon average price. While a base-year index measures the price over time as if the student were to purchase the contents of a base-year market basket, a moving average examines actual current prices and current enrollments. In conjunction, these measures isolate the effects of substituting or changing consumption patterns as well as the impact of these changes upon student expenditures. However, changing consumption patterns should not be confused with changing preference patterns among students. Changes in enrollment are not necessarily moves by students from one type of institution to another. First, we are not examining the same set of students in 1979-80 as 1972-73. Second, the major growth of two-year institutions during the seventies may in part be attributed to the introduction of traditional nonparticipants into higher education rather than a changing preference on the part of students for two-year institutions over four-year institutions.

To illustrate the two methodologies we have elected, we take a simple example of institution A and institution B over the period 1972 to 1979. Assume that their institutional statistics look like those in table 1.

Table 1

Institution A and Institution B

	Institution A				Institution B		Institutions A and B			
	Enrollment	List-Price Tuition	Average Tuition Per Student	Base-Year Enrollment-Weighted Average	Enrollment	List-Price Tuition	Enrollment	Average List Price	Average Tuition	Base-Year (1979) Enrollment-Weighted Average
1972-73	200		$100		300	$650	500	$375	$430	$405 (49.3)
1973-74	210		$125		305	$700	515	$412	$466	$443 (53.9)
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1978-79	300		$500		350	$900	650	$700	$715	$722 (87.8)
1979-80	290		$600		360	$1000	650	$800	$822	$822 (100)
1980-81	300		$750		360	$1250	660	$1000	$1023	$1027 (124.9)

It is readily apparent that at an institutional level the list tuition is equivalent to the average price faced by students at that institution, and also equal to the base-year enrollment-weighted average tuition at that institution. In combining data from institution A and B, however, we find a different set of average observations. For example, the <u>average list price</u>, or the average price charged by institutions A and B, is simply the midpoint between the tuition charged at institution A and the tuition charged at institution B. The average tuition faced by students at institutions A and B (referred to herein as a <u>moving average</u>) takes into account that institution B is larger than institution A, and thus the resulting average is closer to the tuition price at B than at A. Over time, however, the 1979 enrollment-weighted average (which during 1979 is equal to the moving average) and the moving average diverge. In our example, the moving average rises less rapidly than the base-year or Laspeyres average. The moving average reflects a more rapid growth of enrollment in institution A--the less expensive institution--than in institution B. This is most clearly indicated in the change in the moving average and the base-year enrollment-weighted average from 1978 to 1979. The moving average increased from $715 to $822, or $107, although both institutions A and B increased tuition by exactly $100. The reason for this discrepancy is found in the fact that enrollments in institution A--the less expensive

institution--decreased, while enrollments at institution B--the more expensive institution--continued to grow. Thus the moving average floated closer to the higher-priced institution. By contrast, the base-year enrollment-weighted average rose by $100 from 1978 to 1979, the same amount by which both institutions increased their tuition. This effect is produced by the consistent use of 1979 enrollments as a weight, rather than fluctuating this weight according to observed enrollments. In other words, the base-year enrollment-weighted average tracks only price change, in isolation of any changes in enrollments that occur.

The value of using both averages--a moving and a base-year--is that we account for price change and enrollment changes that affect the average price faced by the student. The difference in the two averages represents the effect of enrollment growth in differently-priced institutions. Thus, in our example, the fact that the moving average of $430 in 1972 is more than the 1979 enrollment-weighted average of $405 makes it clear that institution A--the less expensive institution--has grown more rapidly than institution B. This trend becomes more obvious as we move forward from 1979. In order to highlight this, we display 1980-81 data for institution A and B. It is clear that if enrollment patterns had remained the same as in 1979, students would have been paying more than they actually are in 1980 (that is, institution A--the less expensive school--has grown more rapidly than institution B). Thus we find in table 2 the resulting differences of these two methodologies (a moving average and a 1979-weighted average) applied to tuition in all institutions during 1972. Here it is apparent that more expensive other doctoral, specialized professional, and two-year academic schools, along with public comprehensive, baccalaureate, and two-year comprehensive schools, grew more rapidly than the average (implied by the positive sign), while the opposite (indicated by the negative difference) was true among other types of institutions.

Table 2

Comparison of Average Tuition Per Student and 1979 Enrollment-Weighted Average Tuition, 1972-73

	Average Tuition	1979 Weighted Average Tuition	Difference (col. 2-col. 1)
PUBLIC			
Major Doctoral	$740	$735	-5
Other Doctoral	714	720	6
Comprehensive	494	499	5
Baccalaureate	545	547	2
Specialized/Professional	588	581	-7
Two-Year Comprehensive	264	272	8
Two-Year Academic	384	375	-9
Two-Year Occupational	424	386	-38
PRIVATE			
Major Doctoral	$2,725	$2,711	-14
Other Doctoral	2,024	2,040	16
Comprehensive	2,005	1,979	-26
Baccalaureate	1,861	1,805	-56
Specialized/Professional	1,522	1,557	35
Two-Year Comprehensive	1,121	1,115	-6
Two-Year Academic	1,221	1,167	-46
Two-Year Occupational	1,456	1,430	-26

It should be noted that several other methodologies are equally attractive in measuring price change. Daryl Carlson (n.d., p. 109) has noted, regarding development of indexes of higher-education production, what is substantially applicable here:

> By constructing indices to avoid some of the multiple dimension problems associated with production behavior in higher education, a researcher can quite easily bias his results. . . Since various constituencies will value alternative outputs differently, care must be taken to structure the analysis so that certain preference weightings for outputs are not built into the analysis. The assigning of preference weights is up to the policy makers not the researchers.

Understanding the gravity of selecting a single methodology for purposes of studying higher-education prices, we also explored other potentially valuable methodologies applicable to the student-price issue: arithmetic averages and price indexes.

In examining student prices such as tuition and room and board, we are most familiar with arithmetic averages. These are particularly useful in examining changes and overall levels in cost components, such as tuition and room and board. Their value rests in simplicity and public awareness of the way averages are calculated. Tradition also supports the use of arithmetic averages in examining student costs and income. However, a variety of approaches to arithmetic averages are possible in examining student-cost components. The two most frequently used averages are (1) the average price charged by institutions (that is, the average list price reported in column 6 of table 1) and (2) the enrollment-weighted average price (the moving average employed here and exemplified in column 7 of table 1).

The average list price is perhaps the most commonly employed measurement of student expenses. This arithmetic average is calculated as follows:

$$A_i^a = \frac{\sum_{j=i}^{n} p_{ij}}{n}$$

where: i=1972,1973,...,1979;

j=institution;

p_{ij} =price or cost of a particular component under examination;

n=number of institutions.

From an institutional perspective, the average price charged by colleges and universities is important to such policy questions as price-setting among peer institutions. However, other than for pricing decisions on the part of individual institutions, the average price charged by a variety of institutions does not influence the individual circumstances of the student. Since it is the student condition we have elected to study, the average institutional price was unsuitable. From the student viewpoint it is more valuable to examine the average price facing the student. We opted, thus, for the moving average described earlier.

Turning our attention to price indexes, we see that their value rests in the isolation of average price changes; unlike the average noted above, price indexes control for nonprice changes that influence average observations--that is, changing purchasing patterns such as enrollment growth in two-year institutions or an increasing cohort of out-of-state students in public institutions.

The two most frequently used price indexes are the Laspeyres type (base-year weighted) and the Paasche type (current-year weighted). Both indexes control for changes in purchasing patterns: they hold constant the observed purchases to examine the change in price of a specific set of goods and purchases. And both assume that quality is constant, although certain adjustments for specification changes or quality-price changes can be made. We have discussed the Laspeyres-type index and average that we have employed. However, it is appropriate to give at least a cursory examination to a Paasche or current-weighted average.

A Paasche-type price index measures the price change over time of a set of goods and services that represent current purchasing packages--that is, it is current-period weighted. This type of index indicates the average changes in price, if the consumer purchased the same items in the past as he or she does today. For clarity, the following formula provides the skeletal basis of the Paasche-type price index, again looking at enrollment as a weight:

$$P_i^P = \frac{\sum_{j=1}^{n} e_{j(1979)}\, p_{ij}}{\sum_{j=1}^{n} e_{j(1979)}\, p_{j(1972)}}$$

where: i=1972,1973,...,1979;

j=institution;

$e_{j(1979)}$ =enrollment at institution j during 1979;

p_{ij} =the price or cost component under examination at institution j during year i;

n=number of institutions.

The advantage of the Paasche-type index over the Laspeyres type is the currency of weights; however, for the same reasons, the Paasche-type index can only be applied at the time at which data are actually collected. Thus the Paasche technique can be applied using 1979 residence and migration data, for example, to examine historical trends. But it cannot suitably accommodate forthcoming data (1980 and thereafter) regarding price changes without the use of the several assumptions we have used in the moving average (such as constant in-state/out-of-state ratio) or until such time as new residence and migration data are collected (about every three years). Therefore, a Paasche-index procedure can only be accurately incorporated into the series intermittently, in conjunction with future residence and migration surveys. This was sufficient reason for ruling out the use of a Paasche-type index in examining prices faced by the student. However, it should be noted that the Paasche average and the Laspeyres average intersect in 1979--the base-year of our study--and can be derived in index form from the information provided here.

In combination, the Laspeyres and Paasche types of index may show the upper and lower bounds of actual price movement, or the "real price index." Together they reflect both the changes in price and the changes in purchasing patterns that have occurred over the interval under study. The results of the two approaches are currently little different applied to our time interval.

Several other index techniques exist that require at least brief attention. Chain-link indexes were considered that accommodate patterns of both changing consumption and changing price. Usually these indexes are based on existing index methodologies. Instead of controlling purchasing to a pattern observed in either a base or current period, they control such purchasing to the previous year. In other words, the base weight is equal to the set of purchases bought during the previous period. Additional variations on chain-link weighting exist. For example, the geometric average of weights in two or more adjacent periods may be used as a weight in the current period. This is a uniquely harmonious compromise between the key strengths of simple arithmetic averages noted earlier and the powerful measurement potential of price indexes. Despite this advantage, interpretation of a chain-link index over several years is clouded. Unless deconstituted into individual years, the change in the index from, say, 1972 to 1975, is difficult to identify. On the data side of the issue of chain-link indexes, reconstruction of interim weights (for example, the number of out-of-state students) poses significant problems. However, as we have noted, the similarity of the moving average and current and base-year-weighted averages suggests that consumption patterns have not changed sufficiently or erratically enough to justify the use of chain-link indexes. This option may yet prove useful in examining historical (pre-1972) price data, however.

A Fisher-type price index attempts to resolve the variations between findings of the Laspeyres and Paasche indexes noted above. Specifically, this index is the geometric average of the Laspeyres and Paasche indexes. Expressed in formula, it is:

$$p_i^F = \sqrt{p_i^L \quad p_i^P}$$

The underlying logic of a Fisher-type index is the concept that both the Laspeyres and Paasche indexes bound a true price index—and, some would argue, a true cost-of-living index. Thus the geometric average of the two observations is considered to be a somewhat closer approximation to the real index. Again, the use of a Fisher-type index appears unnecessary for the time frame examined, given the relatively close fit between the Paasche and Laspeyres types.

One of the tasks of this development has been to examine different methodologies for studying price changes as they might be applied to prices facing the student. In keeping with this obligation, several different methodologies (previously described) were constructed for the tuition-and-fee component. The ultimate purpose was to identify any empirical justification for using or not using particular measurements in the final analyses. Since there were no striking differences in the findings, conceptual and data considerations became the basis for the selection of measures utilized in this work. Indeed, there was no overwhelming empirical justification for favoring one methodology over another.

In most categories of institutions, the Laspeyres and Paasche indexes are nearly identical. This observation, coupled with the fact that the Fisher index is merely an average of the Laspeyres and Paasche indexes, and the fact that the Laspeyres index is most consistent conceptually with other economic indicators (for example, Consumer Price Index) suggested that the Laspeyres index was the most appropriate of the three for the purpose of constructing indicators of tuition, room, and board. Because of their conceptual simplicity, average prices (the average tuition and fees faced by the student) in a particular year are also included. Although future summaries will concentrate on results using the Laspeyres

methodology, the extensive use of both methodologies here allows the reader to compare and contrast the outcomes of both approaches.

C. Elements of Student Budgets

Overview

Student expenses can be categorized as (1) tuition and required fees, (2) room and board, (3) transportation, (4) books and supplies, and (5) personal or other expenses (Case and Jacobson 1979). The following description identifies these components as they are treated in this series.

Tuition and Required Fees

Public institutions usually have at least two tuition prices--one for in-state students and the other for out-of-state students. For our purposes, and due to the data available to us, we have elected to use the modal figures as reported to the National Center for Education Statistics; these figures account for differences in in- and out-of-state charges but not for differences based on other distinctions. These charges are defined as "all fixed sum charges which are required of such a large proportion of all students that the student who does not pay the charge is an exception." This combines list tuition with required fees. Required fees encompass, at an aggregated level, a variety of unspecified, institution-unique services. List tuition should be studied in isolation from other variables--if only to understand the relationship, if any, between financial aid and tuition-price movement. At present, such study cannot be supported by existing data, and the influence of the rather erratic behavior of required fees on the measurement of tuition fluctuations is not well understood. Beyond the basic distinction of in-state and out-of-state tuitions accommodated in our study, several institutions differentiate prices between lower and upper division, or between in-district and in-state, out-of-district students. In some cases tuition charges are differentiated by

student majors. While our tuition measurements could accommodate these variations in charging, no centralized source of information currently exists either about these charging algorithms or the related enrollment (for example, the number of in-district students). These problems are further complicated in states where charging algorithms differentiate between students from bordering states and all other states and between students intending to pursue upper-division studies within the state and those not so intending, and in states where sharing agreements among counties distinguish out-of-district students by county of residence. These variations in pricing, and the present lack of pertinent data representing them, hinders precise price measurement. The extent of such practices and thus their significance to the findings regarding tuition and required fees are unknown; potential impairment of our findings is acknowledged.

A less serious but noteworthy data handicap in depicting tuition and required fees is the absence of enrollment data corresponding to in-state and out-of-state tuitions, other than for 1972 and 1979. This absence affects analyses of average student prices. Out-of-state enrollments for all years in the series were estimated, based upon 1979 ratios of in-state to out-of-state enrollments. Therefore, changes in student mobility could alter results. Further, residency information was collected for only first-time freshmen and transfer students. As a result, we assume that the demographics of all undergraduate students are similar. Such an assumption may inflate tuition findings for public institutions due to students obtaining residency after initial enrollment. In fact, the comparison of 1972 and 1979 weights in figure 2 suggests that this may be the case.

Institutions that charge zero tuition present a unique problem. It is argued that zero tuition is no tuition, and therefore incorporation of these institutions into any measure of tuition pricing is erroneous. On the other hand, omission of zero tuition may jeopardize the accuracy of average-tuition calculations and also prevent the combination of tuition findings with other price components. The controversy is perhaps philosophical, but its implications

for measurement are ultimately important. To resolve the problem with respect to these indicators, we studied both strategies--calculating list-tuition measurements both with and without measurement of institutions charging zero tuition. In view of the inclusion of required fees in the HEGIS reporting requirements, however, the overall change to the universe is negligible. That is, a number of institutions that had no tuition charge indeed do require student fees. For the most part, institutions charging zero tuition were two-year schools in the West. Moreover, and as figure 3 presents, zero tuition is a disappearing principle. Currently, less than 5 percent of all public institutions have no charges.

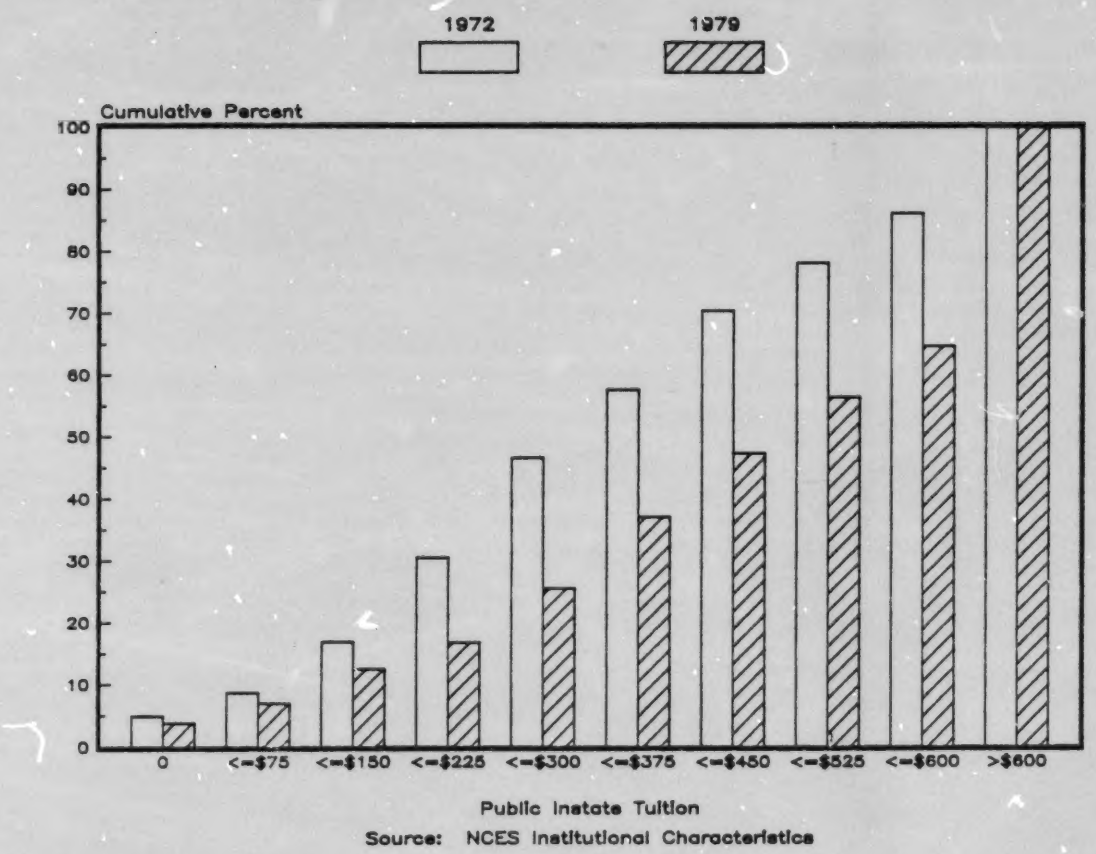

Fig. 3. Cumulative distribution of public institutions, emphasizing those charging less than $600 in tuition, 1972 and 1979

Room and Board Prices

Room and board represent a major student expenditure, ranging from 19 percent of the total budget for commuting students at private four-year colleges to 54 percent for students living off campus (Case and Jacobson 1979). The major focus of our study is upon room and board charges for students living on campus--about one-third of the undergraduate population (see table 3). In addition, we explore briefly the average living costs for students in other living arrangements as reported by the College Board. To derive a 1979 base-year enrollment weight for on-campus room and board, we employed the observed occupancy rate reported by institutions in 1974; the ratio of students living on campus in 1974 to 1974 enrollments was used as a weight applied to enrollments in other years. It is well to note in table 3, however, that these costs pertain to a limited number of full-time students. As table 3 notes, two-year enrollments are nearly unaffected. By contrast, the majority of freshmen and sophomores at four-year colleges face these prices.

All board charges were converted to seven-day figures (for example, institutions with five-day charges were weighted by 7/5). This rescaling is necessary for comparability. However, such weighting inflates findings somewhat. In cases where days were missing, we assumed a seven-day charge.

Table 3

Living Arrangements of College Students 14 to 34 Years Old
By Year and Type of College: October 1978

Full-Time Students	Total College Students (in thousands)	Percent of Total		
		Living at Home	Living on Campus	Living Away from Home, Not on Campus
In 1st or 2nd Year of College				
- at a 2-year college	1,250	89%	6%	5%
- at a 4-year college	2,263	39%	54%	7%
In 3rd or 4th Year of College	2,461	52%	27%	21%
In 5th or Higher Year of College	810	72%	11%	17%
All Full-Time Students	6,979	56%	30%	14%

Source: U.S. Bureau of Census, Current Population Reports, Series P-20, No. 342, "Travel to School: October 1978." Washington, D.C.: U.S. Government Printing Office, 1979.

Other Student Expenses

Currently, tuition and room and board constitute the major proportion of student expenditures (College Entrance Examination Board 1980). Remaining expenses are books and supplies, transportation, and personal or other expenses. According to Case and Jacobson (1979), these expenses are between 18 percent of the budget (for resident and off-campus students at private four-year institutions) and 46 percent of the budget (for commuting students at public two-year institutions). These purchases may, in fact, be the most controllable expense for students. For example, among students financing their own education, a tendency to purchase used books or forego the purchase of textbooks has been observed (Crossley Surveys, Inc. 1980). On the other hand, some suspect that students are increasingly major consumers of luxury items such as stereos and photographic equipment (Buss 1980)--suggesting that expenses other than tuition and room and board may be substantially higher than estimates provided by the College Board and others.

D. Universe

These indicators are constructed from the Higher Education General Information Survey (HEGIS) conducted by the National Center for Education Statistics (NCES). Institutions in the HEGIS universe have been categorized according to the classification scheme developed by NCHEMS for the National Center for Education Statistics (Makowski and Wulfsberg forthcoming); eight categories are used:

- Major research institutions
- Other major doctoral institutions
- Comprehensive institutions
- General baccalaureate institutions
- Professional and specialized institutions

- o Comprehensive two-year institutions
- o Academic two-year institutions
- o Multiprogram occupational two-year institutions

The universe is comprised of institutions included in the HEGIS Institutional Characteristics Survey. This universe is fluid: from 1972 to 1979, 304 undergraduate institutions were added and 110 were deleted. Both of these groups of institutions were excluded from the calculation of these indicators. A serious long-term concern must also be the appearance and disappearance of institutions. In these indicators we have elected to exclude both new and closed institutions in order to enforce the controls necessary for index construction. The disruption to results is unknown; clearly a segment of enrollment is thereby excluded from the calculations. Also excluded were 303 institutions that did not include undergraduate, degree-credit enrollments at some point from 1972 to 1979.

Beyond these major exclusions, several minor modifications to the universe should be noted. Four institutions changed control (public to private or private to public) during the seven-year interval used in this construction; for two institutions that changed control in 1974-75, tuition and fees were interpolated (on a linear basis) for the years 1972-73 and 1973-74. The other two institutions changed control later in the cycle, and therefore, approximating their prices would have been misleading. These institutions were excluded from the calculations. Data from merged institutions were combined consistent with calculations employed in these indicators.

As a result of these adjustments, 2,488 institutions are included in the tuition calculations for indicators of tuition, room, and board. Tables 4 and 5 document the data-base changes by institutional type and region. It should be noted that these exclusions account for only 4,993 students or less than .01 percent of the 1978-79 full-time undergraduate enrollment. Although the enrollment base is not substantially diminished, table 4 indicates major reductions in the number of private two-year and professional institutions

considered. The concentration of graduate schools and recent accreditation among professional schools accounts for a large proportion of this change. Within the two-year strata, closures, recent entry into the HEGIS universe, and nondegree enrollments greatly reduced the number of institutions that could be considered.

Table 4

Changes In HEGIS Universe by Class of Institution

Institutions Which Were	NCHEMS Classification*								
	A1	A2	B	C	D	E1	E2	E3	Total
Not Changed									
Public	51	58	237	107	53	594	33	131	1264
Private	25	35	142	603	245	46	85	43	1224
Graduate									
Public	0	1	0	1	11	0	0	0	13
Private	1	2	3	1	189	0	0	0	196
Merged									
Public	4	0	3	0	2	15	0	3	27
Private	0	0	1	2	2	0	0	2	7
Separated									
Public	0	0	0	0	0	3	0	0	3
Private	0	0	0	0	0	0	0	0	0
Closed									
Public	0	0	0	0	1	7	0	1	9
Private	0	0	1	29	19	8	11	3	71
Disqualified									
Public	0	0	0	0	0	0	0	0	0
Private	0	0	0	3	15	2	3	7	30
Opened									
Public	0	0	3	2	1	32	5	8	51
Private	0	0	1	5	6	0	4	22	
Accredited									
Public	0	0	3	3	2	13	3	26	50
Private	0	0	0	18	77	22	6	57	180
Non-Degree									
Public	0	0	0	2	0	1	0	72	75
Private	0	0	0	0	5	0	0	18	23
Graduate for One Year or More									
Public	0	0	1	0	3	0	0	0	4
Private	0	0	0	0	9	0	0	0	9
Changed In Control									
Public	0	0	0	1	0	0	1	0	2
Private	0	0	0	0	0	0	0	0	0
TOTAL									
Public	55	59	247	115	73	665	42	241	1498
Private	26	37	148	662	566	84	105	134	1762

* A1 Major Research
A2 Other Doctoral
B Comprehensive
C General Baccalaureate
D Professional/Specialized (including medical)
E1 Two-Year Comprehensive
E2 Two-Year Academic
E3 Two-Year Occupational

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Table 5

Changes in HEGIS Universe Between 1972-73 and 1979-80 by Region of Country

Institutions Which Were	Region: North Atlantic	Great Lakes And Plains	Southeast	West and Southwest	Total
Not Changed					
Public	263	310	313	378	1264
Private	404	365	269	186	1222
Graduate					
Public	3	3	3	4	13
Private	59	68	22	47	196
Merged					
Public	17	3	5	2	27
Private	5	1	1	0	7
Separated					
Public	0	0	0	3	3
Private	0	0	0	0	0
Closed					
Public	2	2	2	3	9
Private	36	15	7	12	71
Disqualified					
Public	0	0	0	0	0
Private	19	3	2	6	30
Opened					
Public	6	7	14	24	51
Private	5	5	5	7	22
Accredited					
Public	17	11	9	13	50
Private	77	25	49	29	180
Non-Degree					
Public	3	38	28	6	75
Private	9	6	5	3	23
Graduates for 1 Year or More					
Public	1	0	0	3	4
Private	5	0	2	2	9
Changed in Control					
Public	0	0	1	1	2
Private	0	0	0	0	0
TOTAL					
Public	312	374	375	437	1498
Private	619	488	362	292	1762

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On-campus housing charges were also calculated for the institutions studied here. For the period 1972-73 to 1979-80, 857 institutions offered no plan for room and board at some point in the interval. These institutions also were not included in the findings for combined room, board, and tuition. Table 6 shows the universe employed in the analysis of charges for room and board.

Table 6

Number of Institutions
(1) Used in Calculations for Tuition
(2) Used in Calculations for On-Campus Room and Board

	Control					
	Public		Private		Total	
Level	N1*	N2*	N1*	N2*	N1*	N2*
Major Doctoral	51	50	25	24	76	74
Other Doctoral	58	54	35	32	93	86
Comprehensive	237	188	142	135	379	323
Baccalaureate	107	83	603	572	710	655
Two-Year	758	152	174	136	932	288
Specialized	54	30	244	160	298	190
Total	1265	557	1223	1059	2488	1616

N1 = Number of institutions used in tuition calculations

N2 = Number of institutions used in on-campus room and board calculations

3. Overview of Findings

A. List Tuition and Required Fees

Summary

As table 7 indicates, among public institutions in 1979-80, average per-student tuition was $794. Among private institutions, in 1979-80, the average price faced by the student was $3,213. The 1979 enrollment-weighted prices (which appear in parentheses) show the prices students would have paid each year if they had purchased the same education as students did in 1979-80. The discrepancies between these figures and the actual average-tuition prices show that students in 1979-80 were purchasing less expensive education than in previous years, although not to marked effect. Some types of institutions (particularly private professional and other doctoral colleges and universities) are virtually unaffected by any such trend. By contrast, and already highlighted in table 2, average prices faced by the student have been reduced by changing enrollment patterns within the two-year academic and occupational schools, private baccalaureate institutions, and (to a lesser degree) four-year comprehensive institutions. One should recall that these are averages--indeed, the range of prices faced by students in 1972-73 was from zero to $1,565 in public institutions and from zero to $3,975 in private institutions. (A few private specialized and professional institutions accept other compensation in exchange for tuition--for example, work provided by the student.) Seven years later, in 1979, these ranges were from zero to $2,216 in public institutions and from zero to $6,590 in private institutions. Indeed, these ranges continue to shift upward. For example, we have seen in figure 3 the diminishing numbers of public institutions having no tuition. In figure 4 we find that private institutions charging less than $1,500 are vanishing. Further, and as illustrated in figures 5 and 6, tuition charges of less than $400 are almost exclusively restricted to public two-year and comprehensive institutions. Also highlighted in

figures 5 and 6 are the growing numbers of private students enrolled in institutions charging more than $3,000.

Table 7

Average Tuition Per Student

Public and Private Institutions
(1979 Enrollment-Weighted Average in Parentheses)

Control	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
Public	$539 (522)	$534 (540)	$547 (557)	$574 (592)	$642 (654)	$688 (698)	$733 (735)	$794
Private	$1,953 (1,905)	$2,022 (2,008)	$2,152 (2,140)	$2,327 (2,336)	$2,514 (2,519)	$2,699 (2,705)	$2,945 (2,941)	$3,213

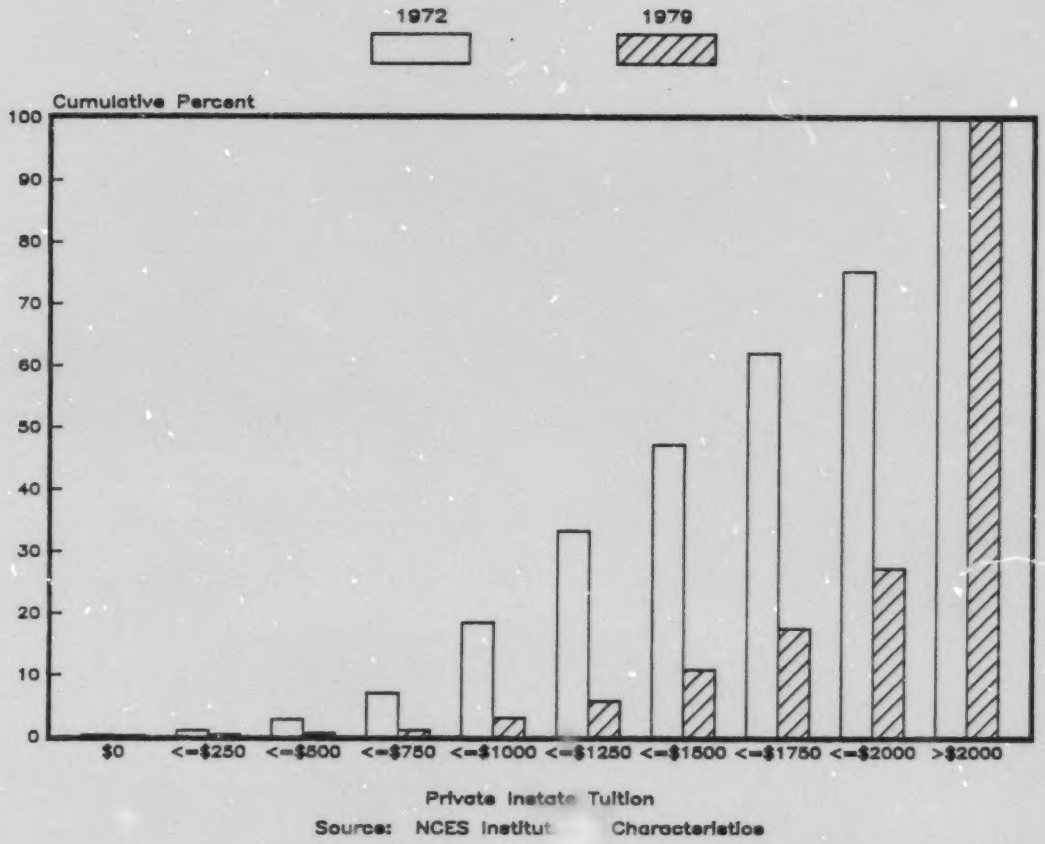


Fig. 4. Cumulative distribution of private institutions, emphasizing those charging less than $2,000 in tuition, 1972 and 1979

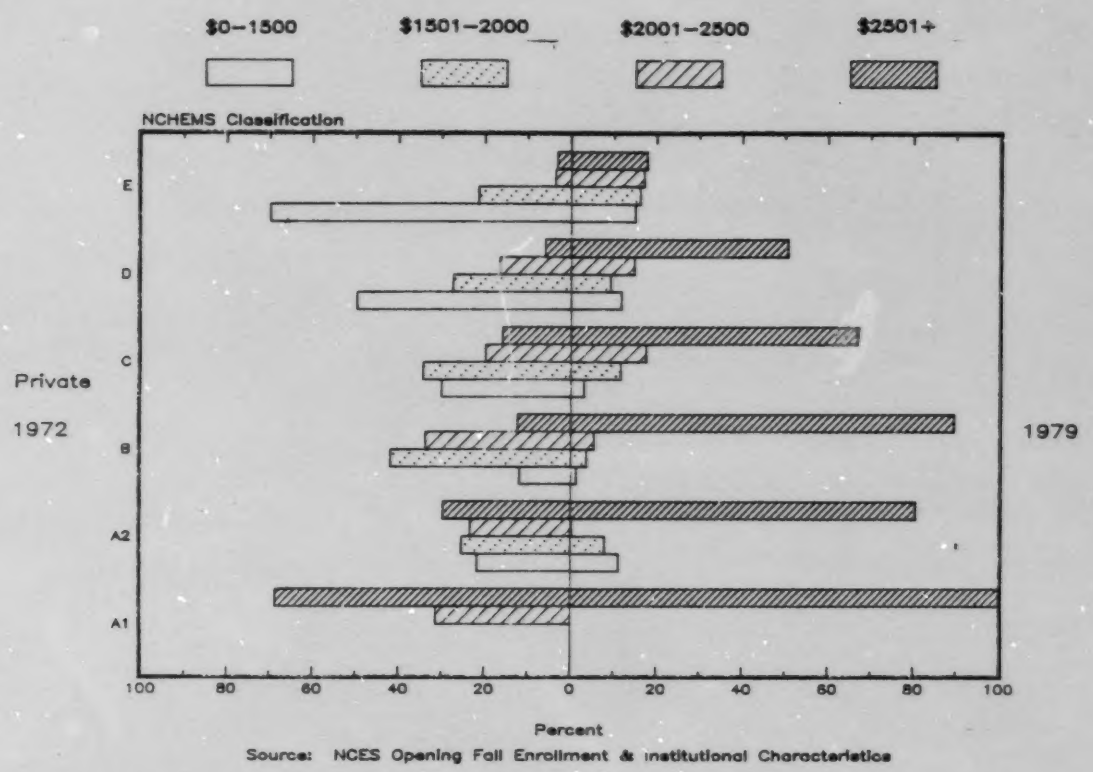


Fig. 5. Percent of full-time enrollment attending private institutions by tuition levels

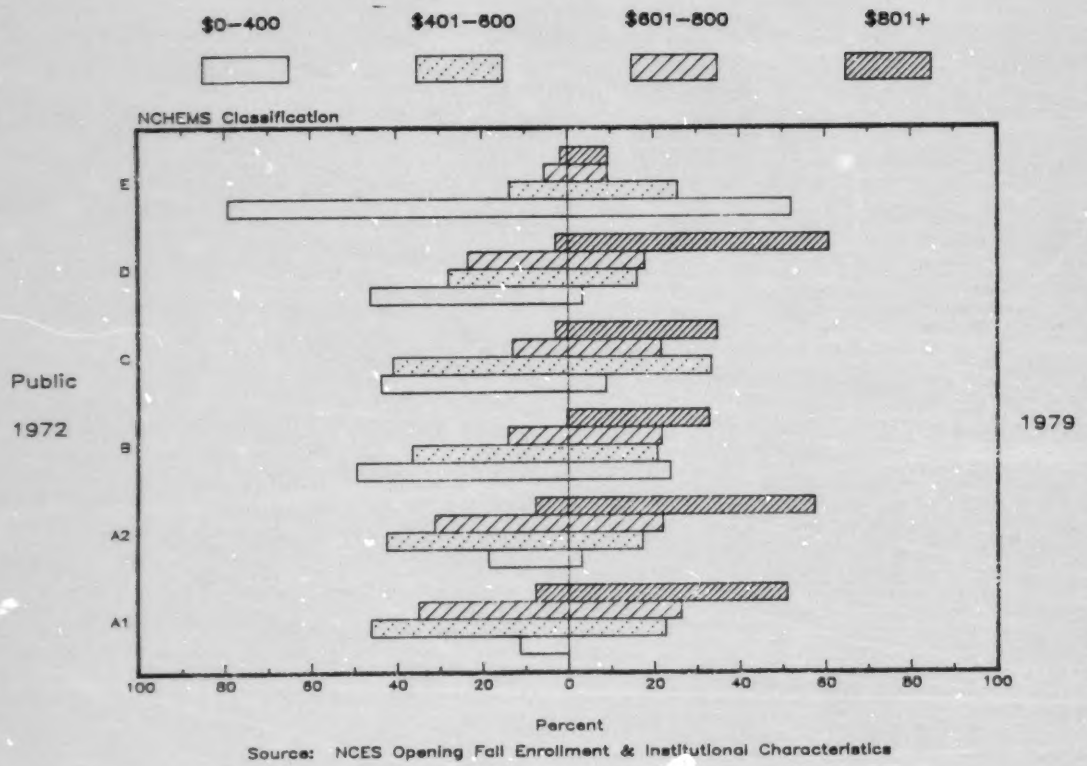


Fig. 6. Percent of full-time enrollment attending public institutions by tuition levels

Comparison of List Tuition and Required Fees to Other Prices

In evaluating tuition movement against both the Consumer Price Index (CPI) and an index of disposable personal income (see figure 1), it is apparent that tuition has increased more slowly than either average product prices or personal income. As alluded to earlier, however, the rapid rise in prices for heavily weighted necessities represented in the Consumer Price Index overwhelms price increases in goods and services such as education.

For the most part, and with the exception of two-year colleges, there is a general consistency among the pricing patterns of institutions under similar control. Among private institutions, pricing movement has closely corresponded to the Consumer Price Index. This has been most particularly true in recent years. Among private four-year colleges and universities, only major research universities have exceeded proportionate increases of the CPI. Public-institution pricing, however, exhibits far greater variability in these analyses.

The Higher Education Price Index (Halstead 1975), when compared to tuition (see also figure 1), closely corresponds to the price movement of private institutions. The Higher Education Price Index (HEPI) is a measure of price inflation in exemplary purchases made by institutions. It is, for this reason, useful as a comparative indicator although it does not represent, for example, the purchasing patterns of two-year colleges. Despite this limitation, it seems reasonable to infer that tuition in private institutions is more sensitive to rising resource costs than is tuition in public institutions. As such, then, tuition probably represents the same relative level of support for private institutions as in the past. For public institutions, either other sources of revenue (such as state and local appropriations) are absorbing the growing gap between resource costs (as measured by HEPI) and tuition revenues, or purchasing patterns are changing (greater conservation of resources, substitute purchasing). There is, however, a growing trend among public institutions to relate tuition to the cost of instruction and to attach increasing importance to tuition

revenues. The price movement of public institutions during recent years seems to confirm this notion. Further, according to Chambers (1978), tuition revenues at public universities accounted for 16.7 percent of educational and general expenditures in 1975, as compared to 13.2 percent a decade earlier. On the other hand, McCoy and Halstead (1979, p. 39) found that tuition revenues in public institutions decreased by one point as a percentage of educational and general revenues between fiscal year 1972-73 and 1976-77, from 17 to 16 percent. Meanwhile, state and local appropriations grew from 58 percent to 60 percent of this institutional income category. Indeed, a growing dependency upon appropriations has been documented among leading public research universities ("Dependency of Leading Research Institutions on Federal Funding" 1980, p. A-11).

Tuition Price Movement

Although the acceleration of tuition price is of concern, we must note that it is lower-priced institutions that have generally increased at rates substantially above higher-priced institutions. As figures 7 and 8 outline, this is true both among public and private institutions. By examining the tuition-price movement of the lowest-priced institutions, we find that the 451 public institutions charging $200 or less in tuition during the 1972-73 academic year had increased prices by 139 percent by 1979-80; as compared to the average 52 percent increase of all public institutions; for the 669 private institutions charging $1,000 or less in tuition for the academic year 1972-73, prices rose by 90 percent as compared to the average private-tuition increase from 1972-73 to 1979-80 of 69 percent.

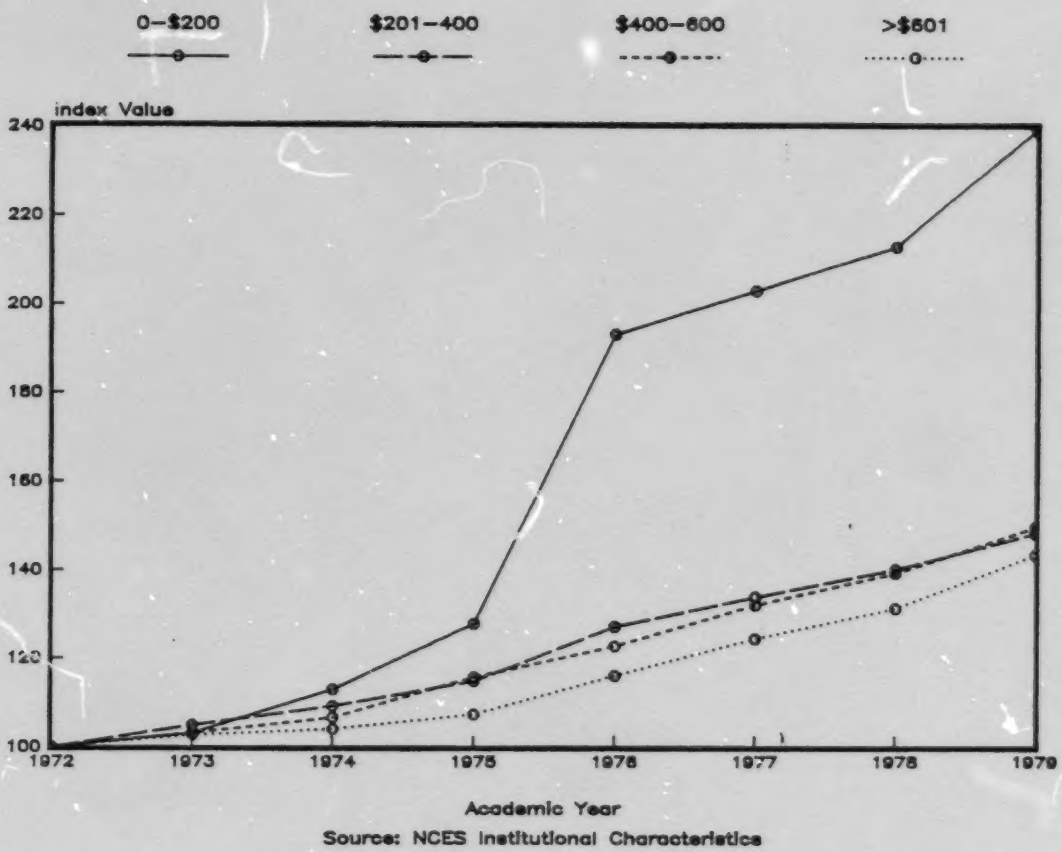
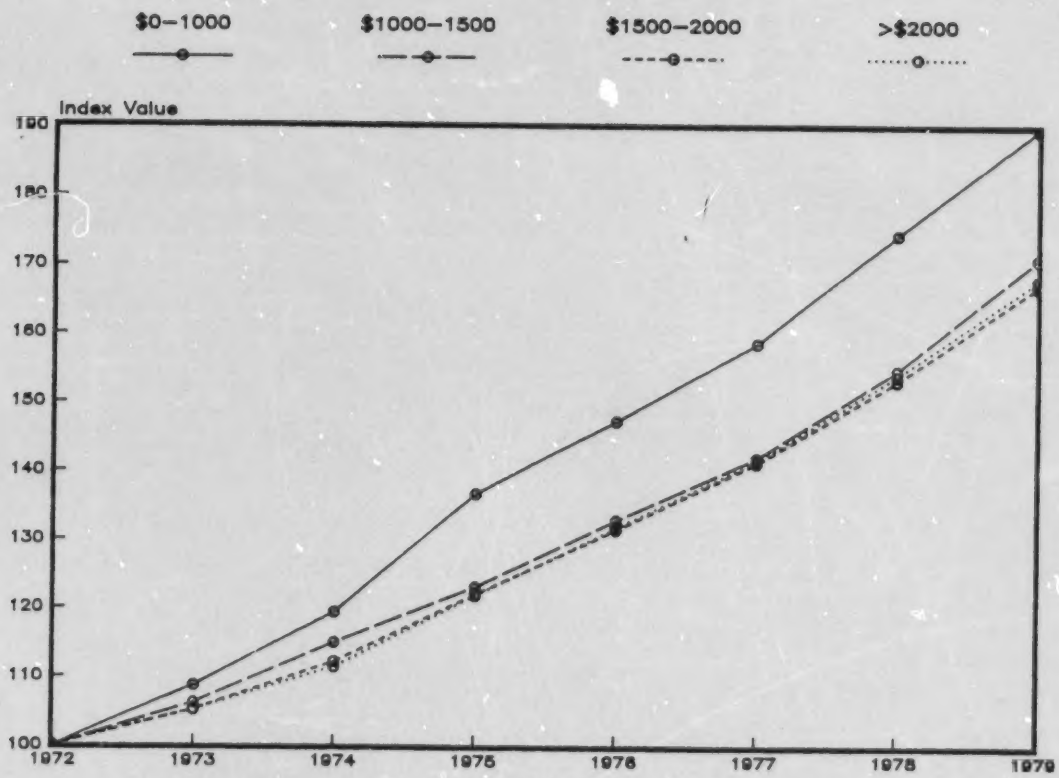


Fig. 7. Tuition-price movement at public institutions (1972=100)



Source: NCES Institutional Characteristics

Fig. 8. Tuition-price movement at private institutions (1972=100)

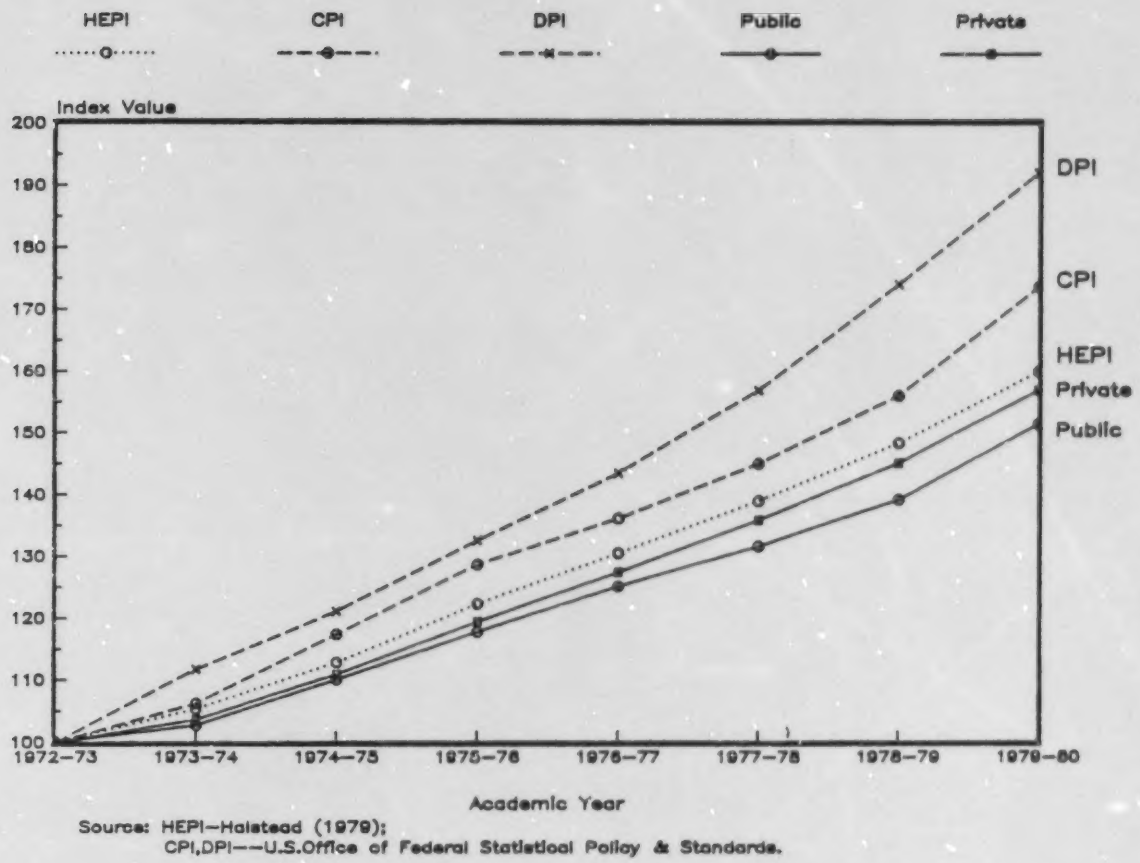
B. Room and Board

As table 8 outlines, differences between public and private institutions in 1979-80 in charges for room and board amounted to only $230 for the average student. Further, these expenses are moving at approximately equivalent rates in both sectors. This is not unexpected, since room and board costs are less affected by institutional distinctions than are tuition rates. This assertion is further supported by the consistency between the base-year room-and-board indicators that are occupancy-weighted and the Higher Education Price Index depicted in figure 9. Despite these similarities, there exists a small yet growing gap in charges for room and board between public and private institutions, as suggested in figure 9. Assuming that such auxiliary services are fully self-supporting, this gap may reflect quality differences. On the other hand, during this same period, 1972-73 to 1979-80, the composite price index for food at home and rent rose by 78 percent, considerably above the overall rise in room and board prices for either public or private institutions.

Table 8

Average Room and Board Charges by Institutional Control
and an Index of Food at Home and Rent
(1974 Occupancy-Weighted Index in Parentheses)

	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
PUBLIC	$1,018	$1,047 (102.7)	$1,123 (109.9)	$1,200 (117.8)	$1,274 (125.1)	$1,339 (131.6)	$1,416 (139.2)	$1,541 (151.4)
PRIVATE	$1,124	$1,165 (103.6)	$1,248 (111.0)	$1,343 (119.4)	$1,438 (127.6)	$1,531 (135.6)	$1,636 (145.1)	$1,771 (156.9)
CPI Index of Rent and Food at Home (Rescaled)	100	112.7	126.4	135.8	140.6	148.1	162.4	177.8



Source: HEPI—Halstead (1979);
CPI,DPI——U.S.Office of Federal Statistical Policy & Standards.

Fig. 9. Comparison of room and board price movement with the Consumer Price Index, disposable personal income, and the Higher Education Price Index

In general, average charges for room and board faced by public students ranged from $1,262 for academic, two-year institutions to $1,688 for two-year, occupational institutions in 1979-80. Among private institutions, these averages ranged from $1,475 for two-year, academic schools to $2,381 among major research institutions.

Those students living on campus, then, faced an average price of $3,640 for tuition, room, and board--$2,492 on public campuses and $5,180 on private campuses. Table 9 documents these prices.

Table 9

Average Tuition, Room, and Board for Public and Private Institutions
(1979 Occupancy-Weighted Average in Parentheses)

	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
Public	$1,661 (1,663)	$1,711 (1,711)	$1,812 (1,807)	$1,927 (1,928)	$2,058 (2,058)	$2,175 (2,177)	$2,247 (2,301)	$2,492
Private	$3,144 (3,138)	$3,296 (3,285)	$3,519 (3,509)	$3,806 (3,809)	$4,106 (4,106)	$4,395 (4,396)	$4,762 (4,758)	$5,180

While we have not explored off-campus housing, it is helpful to examine changes in these expenses as reported to the College Scholarship Service (College Entrance Examination Board 1980). Figure 10 displays the changes reported between 1976 and 1979.

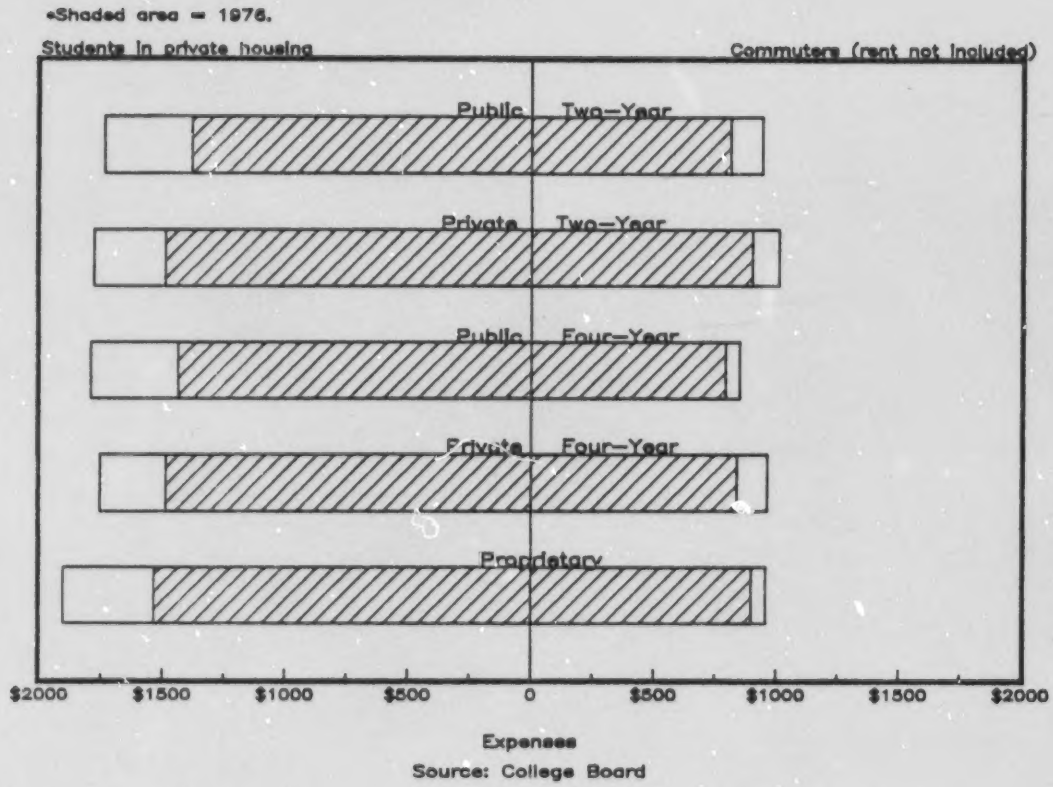


Fig. 10. Room and board expenses off campus, 1976 and 1979

As we recall from table 1, 56 percent of all full-time students are commuter students. While commuter expenses include only typical meal costs (any rents paid by the commuters to their families are excluded), these estimates fall dramatically behind the Consumer Price Index for food at home. From 1976 to December 1979, food prices rose by 33 percent, at least three times the increases reported to the College Board.

For students living in private housing, a comparison between 1976 and 1979 expenses for housing and board is also presented in figure 10. This cost increase approximates rental increases of 25 percent noted by the Consumer Price Index between 1976 and December 1979. In all classes of institutions, students living in private housing paid, on the average, more than their peers living on campus, and this expense increased more rapidly. This circumstance is tempered by the fact that only 21 percent of upper-division and 6 percent of lower-division students live in private housing.

Following sections portray the tuition-price patterns observed regionally and for each institutional class. These patterns are compared to economic measures and to higher-education costs and expenditures. Figure 1, the reader will recall, mapped tuition pricing trends against the Consumer Price Index, an index of disposable personal income per capita, and the Higher Education Price Index.

C. Regional Pricing Differences

As indicated in table 10, North Atlantic tuitions in the public sector increased at a more rapid rate than public institutions elsewhere in the country. Further, the dollar amount of these increases was larger. Interestingly, this area embraces the fewest public (312) and the most private (619) institutions of the four regions. Not surprisingly then, and as figure 11 indicates, the North Atlantic region has the largest number of private students in the country and the fewest public students.

Table 10

Average Tuition by Region
Public and Private Institutions
(1979 Enrollment-Weighted Average in Parentheses)

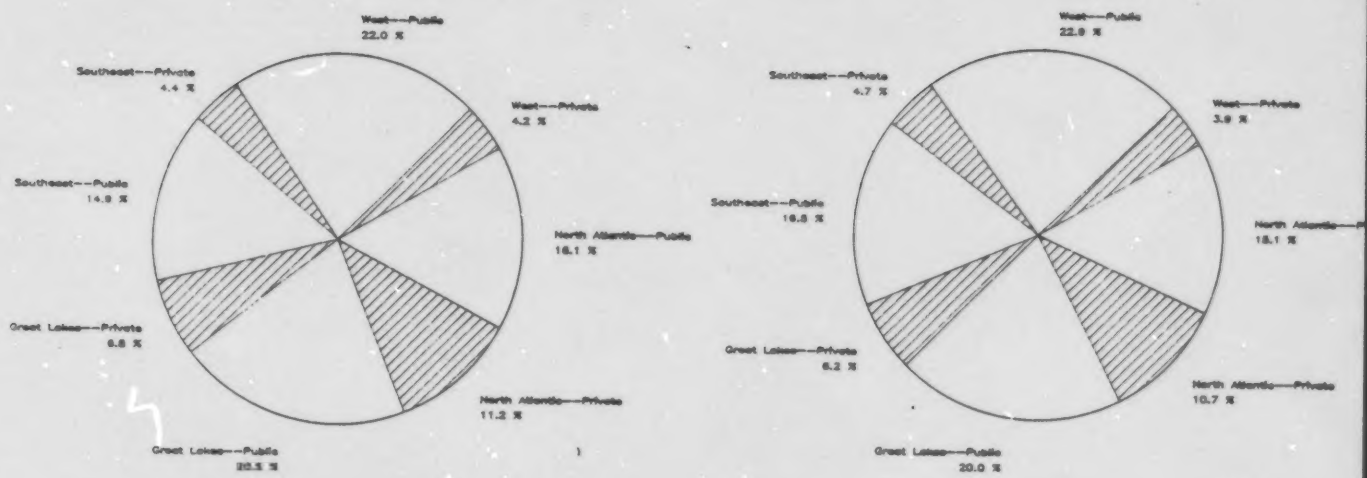
PUBLIC	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
North Atlantic	$599 (603)	$625 (635)	$631 (645)	$668 (682)	$846 (851)	$899 (900)	$948 (948)	$1,042
Great Lakes/ Plains	$650 (629)	$648 (648)	$670 (669)	$693 (702)	$743 (748)	$807 (812)	$859 (861)	$939
Southeastern	$519 (500)	$521 (519)	$534 (535)	$569 (584)	$608 (615)	$641 (646)	$665 (666)	$707
Southwest/ West	$411 (393)	$380 (397)	$402 (419)	$418 (443)	$449 (470)	$485 (502)	$528 (532)	$565
PRIVATE								
North Atlantic	$2,272 (2,205)	$2,346 (2,326)	$2,484 (2,458)	$2,694 (2,700)	$2,910 (2,905)	$3,123 (3,117)	$3,386 (3,378)	$3,683
Great Lakes/ Plains	$1,908 (1,851)	$1,962 (1,936)	$2,101 (2,080)	$2,244 (2,246)	$2,411 (2,413)	$2,595 (2,602)	$2,833 (2,831)	$3,100
Southeast	$1,557 (1,500)	$1,600 (1,588)	$1,698 (1,697)	$1,828 (1,847)	$1,970 (1,999)	$2,106 (2,125)	$2,320 (2,324)	$2,540
Southwest/ West	$1,607 (1,625)	$1,731 (1,727)	$1,858 (1,862)	$2,034 (2,030)	$2,230 (2,217)	$2,391 (2,394)	$2,622 (2,616)	$2,863

North Atlantic States: Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont

Great Lakes/Plains States: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin

Southeastern States: Alabama, Arizona, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia

Western/Southwestern States: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oklahoma, Oregon, Texas, Utah, Washington, Wyoming



Source: NCES Opening Fall Enrollment

Fig. 11. Distribution of full-time enrollment by region. Left, 1972; right. 1979.

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Among private institutions, regional differences in pricing increases were less distinct. The West/Southwest led in rate of tuition increases. In absolute dollars, however, the North Atlantic and the Great Lakes/Plains areas remained the highest-priced regions. It should be noted that the West/Southwest region has the highest proportion of public institutions and therefore the lowest proportion of private institutions (438 and 291 institutions, respectively). The West/Southwest region also sustains the highest public and lowest private enrollments. Changes in enrollment distribution acted as a deterrent to rising average tuition in all but one category. This is illustrated in table 10, where average tuition faced by public-institution enrollees actually declined in 1973-74 in the West/Southwest region. Perhaps most unexpectedly, enrollment changes did not act as an inhibitor to rising tuition facing students in private western and southwestern institutions.

On the other hand, and as suggested in table 11, trends in room and board blunted certain regional pricing differences. Room and board charges increased most rapidly in western, southwestern, and southeastern public institutions, although the North Atlantic remains the highest priced in both public and private categories. It should be remembered, however, that room and board prices are greatly influenced by local costs. Thus, we find the Southeast (where prices are generally lower) falling below other regions of the country in charges for room and board. Changing enrollment patterns have also not influenced the average price for room and board, in contrast to the phenomenon noted for tuition. Obviously, institutional pricing distinctions are minute.

Table 11

Average Room and Board by Region and Institutional Control
(Base-Year Occupancy-Weighted Average in Parentheses)

PUBLIC	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
North Atlantic	$1,157 (1,163)	$1,195 (1,199)	$1,255 (1,256)	$1,312 (1,312)	$1,410 (1,413)	$1,468 (1,470)	$1,531 (1,530)	$1,666
Great Lakes/ Plains	$1,050 (1,047)	$1,058 (1,057)	$1,149 (1,145)	$1,217 (1,215)	$1,275 (1,272)	$1,342 (1,341)	$1,410 (1,410)	$1,522
Southeast	$ 918 (921)	$ 952 (954)	$1,014 (1,014)	$1,108 (1,110)	$1,176 (1,179)	$1,228 (1,231)	$1,318 (1,318)	$1,442
Southwest/ West	$ 983 (985)	$1,023 (1,025)	$1,111 (1,111)	$1,199 (1,199)	$1,287 (1,289)	$1,372 (1,375)	$1,460 (1,463)	$1,594
PRIVATE								
North Atlantic	$1,285 (1,288)	$1,335 (1,337)	$1,430 (1,432)	$1,549 (1,549)	$1,651 (1,654)	$1,768 (1,761)	$1,875 (1,874)	$2,024
Great Lakes/ Plains	$1,039 (1,040)	$1,074 (1,077)	$1,137 (1,138)	$1,218 (1,218)	$1,306 (1,307)	$1,384 (1,386)	$1,487 (1,488)	$1,602
Southeast	$ 973 (978)	$1,013 (1,018)	$1,084 (1,090)	$1,164 (1,172)	$1,250 (1,257)	$1,316 (1,322)	$1,409 (1,413)	$1,525
Southwest/ West	$1,057 (1,060)	$1,083 (1,086)	$1,186 (1,188)	$1,265 (1,267)	$1,367 (1,365)	$1,452 (1,451)	$1,569 (1,567)	$1,720

Contrasting these conditions to enrollment movements, it is notable that enrollments in southeastern public and private institutions increased by twenty percent. Western and southwestern public institutions experienced an overall 15 percent increase in enrollments from 1972-73 to 1979-80, peaking in 1975-76 at a growth of 27 percent. These increases compare favorably with growth rates of only 10 percent and 8 percent in the North Atlantic and Great Lakes/Plains regions, respectively. Among private schools, growth was less marked, ranging from 9 percent and 8 percent in the Southeast and North Atlantic, to only 1 percent and 4 percent in the Great Lakes/Plains and Western/Southwestern regions, respectively. Indeed, during 1973-74 and 1976-77, the private sector in all but the Southeast experienced losses in full-time enrollments.

The extent to which tuition pricing, number of institutions, and enrollment patterns relate to each other is clouded. The West/Southwest--with its tradition of wide support for public higher education and corresponding commitment to low tuition--contrasts with the North Atlantic's solid heritage of privately-supported higher education. In light of these parallel histories, differences in tuition pricing and pricing policies (particularly among public institutions) are to be expected. Perhaps the most unanticipated finding is that the concentration of public, relatively low-priced, institutions in the West/Southwest has not placed any visible, downward pricing pressure on private institutions in this region. In fact, tuitions in western and southwestern private schools are accelerating more rapidly than in other regions. Nevertheless, and as noted earlier, this price trend among western and southwestern private schools has not swayed new enrollments toward less-expensive schools.

The outcomes of these trends are mixed. As figure 11 details, the relative enrollments of these regions have remained virtually unchanged. The Southeast exhibits a mild growth and the North Atlantic a slight retrenchment from 1972. At the same time, there is no evidence to suggest that regional differences in pricing have an exclusionary or elitist effect on student populations. In fact, we find in figure 12 that only in the Midwest did a significant concentration of entering freshmen come from families in upper-income levels in 1979. Indeed, for all regions but the Midwest, approximately a third (as compared to a quarter in the Midwest) of entering freshmen were from families with parental incomes of less than $15,000. Actually, income differences between regions of the West and South and regions of the East were seemingly more pronounced earlier in the decade. In 1972, fully a quarter of entering freshmen in the South and West were from families with incomes of less than $8,000 (as compared to 20 percent in the East and 17 percent in the Midwest), a third from incomes less than $10,000 and one-half from families with parental incomes of less than $12,500. Thus, evidence suggests that with the possible exception of students in the Midwest, entering freshmen are not at an economic advantage in any region.

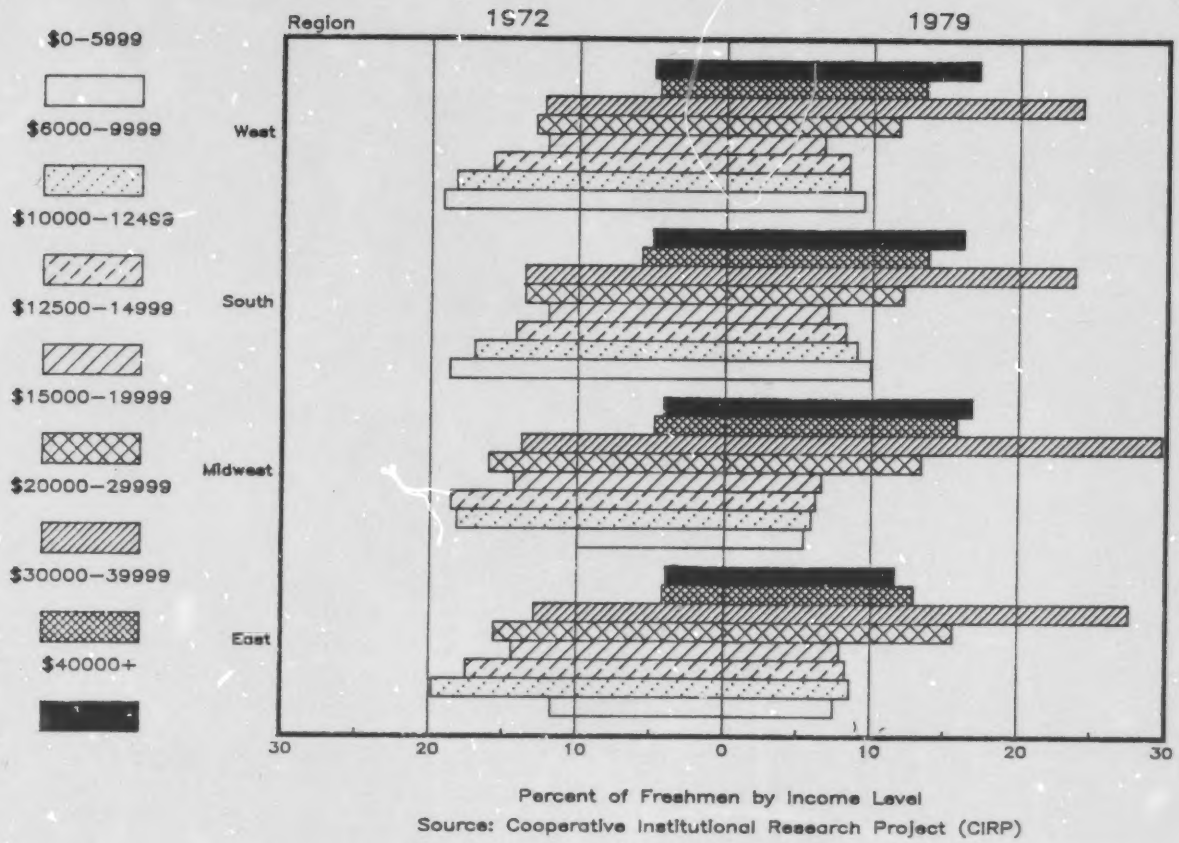


Fig. 12. Family income of entering freshmen by region, 1972 and 1979

D. Other Student Expenditures

It is also worthwhile to highlight the additional costs incurred by the student for one year of undergraduate education. Comparing findings of the College Scholarship Service regarding student expenditures from 1976 (Suchar, Van Dusen, and Jacobson 1976) and 1979 (Case and Jacobson 1979), figure 13 shows that expenses other than tuition and room and board have risen for students living on campus by less than 15 percent. In fact, proprietary institutions reported a three percent reduction in these costs (by $25 to $925). On the other hand, among commuters these other expenses (transportation, books and supplies, and personal purchases) are rising at a rate above that of other types of students. With the single exception of private, four-year enrollments, students living off campus faced more rapidly increasing costs than their on-campus peers. The single discriminating expense among students in different living arrangements is clearly transportation. These data are examined in figure 13.

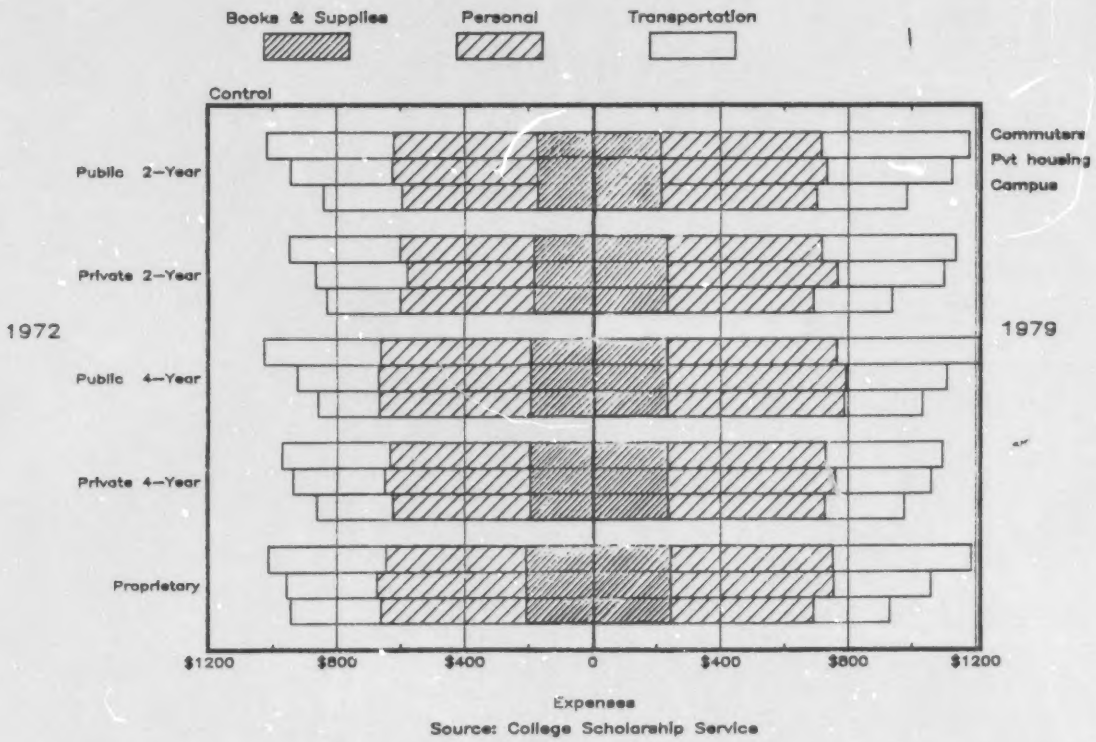


Fig. 13. Other student expenses by living arrangement, 1976 and 1979

While these increases are considerably less than the increases in the Consumer Price Index, which rose 39 percent during this same time, it is necessary to remember that these cost estimates are institutionally provided, and thereby may give a picture more optimistic than real of student purchasing patterns.

Dissecting these expenses, we find that from 1976-77 to 1979-80, expenses for books and supplies rose between 12 and 21 percent as figure 13 suggested. In general, these increases in textbooks and supplies are similar to the 16 percent increase noted by the Consumer Price Index between 1977 and 1979 for educational books and supplies. Further, the College Board's findings are substantiated by Crossley Surveys (1980) which found that textbooks alone averaged $83 per term--$104 for private-institution enrollees, and $77 for public-institution enrollees. Also, Crossley Surveys observed that four-year college enrollees spend an average of $89, as opposed to $67 for two-year students.

The range of personal-expense increases noted by the College Board was from $39 for students living on campus at private two-year institutions to $126 for students living off campus at that type of institution. Transportation charges ranged from a 16 percent decrease for students living on campus at proprietary schools to a 27 percent increase for students living on campus at public four-year institutions. However, the highest transportation costs were observed among commuting students, who pay more than their counterparts with alternative living arrangements. Students at public two-year institutions were estimated to pay $464 for transportation, the highest reported average. On the other hand, the student in the average proprietary institution paid $239, the lowest observed cost. It should be noted that between 1976 and 1979, the Consumer Price Index for transportation rose 32 percent, somewhat above estimates provided to the College Board. One final caveat about these data: Leslie's findings (forthcoming) using data from the National Longitudinal Studies of 1972 High School Graduates suggest that the average income of students for 1975-76 was, with the exception of

public two-year enrollees and commuting public four-year students, insufficient to cover the budgets reported by the College Board for the same year. Thus while consumer price data would suggest that information reported to the College Board may be less than actual student expenses, income data would suggest the converse.

E. Findings for Institutional Class

Major Doctorate-Granting Institutions

As defined by Makowski and Wulfsberg (forthcoming):

> These institutions are characterized by a significant level of activity in and commitment to doctoral-level education as measured by the number of doctorate recipients and the diversity in doctorate program offerings. Included in this category are those institutions . . . which grant a minimum of 50 doctoral-level degrees. These degrees must be granted in 3 or more doctoral-level program areas or, alternatively, have an interdisciplinary program at the doctorate level.

For purposes of our presentation, we have elected to treat separately major research institutions--defined as institutions that "are engaged significantly in research activities as measured by the amount of expenditures for research purposes. These institutions are the leading 75 [sic] institutions with regard to research expenditures". (Makowski and Wulfsberg forthcoming)

Fifty-one public and 25 private institutions comprise this category. The category of other major doctorate-granting institutions includes 58 public and 35 private institutions. Table 12 provides the tuition results for these categories.

Table 12

Average Tuition Per Student
for Major Doctorate-Granting Institutions
(Base-Year Enrollment-Weighted Average in Parentheses)

PUBLIC	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
Major Research	$740 (735)	$761 (757)	$788 (784)	$840 (839)	$900 (900)	$964 (962)	$1,015 (1,015)	$1,098
Other Doctoral	$714 (720)	$729 (734)	$751 (756)	$827 (829)	$881 (882)	$934 (933)	$993 (995)	$1,075
PRIVATE								
Major Research	$2,725 (2,711)	$2,913 (2,895)	$3,080 (3,067)	$3,425 (3,411)	$3,733 (3,712)	$4,008 (3,992)	$4,382 (4,369)	$4,787
Other Doctoral	$2,024 (2,040)	$2,127 (2,139)	$2,292 (2,280)	$2,501 (2,494)	$2,757 (2,730)	$2,931 (2,920)	$3,162 (3,155)	$3,417

An interesting fact emerges from a comparison of the 1972-73 averages with the average tuition if 1979-80 enrollment patterns were applied. Enrollment trends at doctorate-granting institutions, at least, have had no downward effect upon average tuition prices faced by students. As figure 14 indicates, and consistent with other types of institutions, public tuition increases are lagging sharply behind those of private institutions. It should be noted that among major research universities, private institutions are twice as dependent upon tuition as a revenue source as are their public counterparts, and this ratio is tripled in other types of institutions ("Dependency of Leading Research Institutions on Federal Funding" 1980, p. A-11).

Although there is no overlap in tuition pricing between public and private major research universities (1972-73 ranges were between $233 and $1,200 for public institutions and between $2,245 and $3,099 for private; 1979 ranges were between $438 and $2,216 for public, $3,301 and $5,745 for private), there is considerable overlap between prices at other public doctorate-granting institutions and their private peers. The 1972-73 ranges were between $151 and $1,082 for public tuition and between $450 and $3,060 for private tuition. Seven years

later, these same ranges were between $356 and $1,810 at public institutions and between $900 and $5,450 at private institutions.

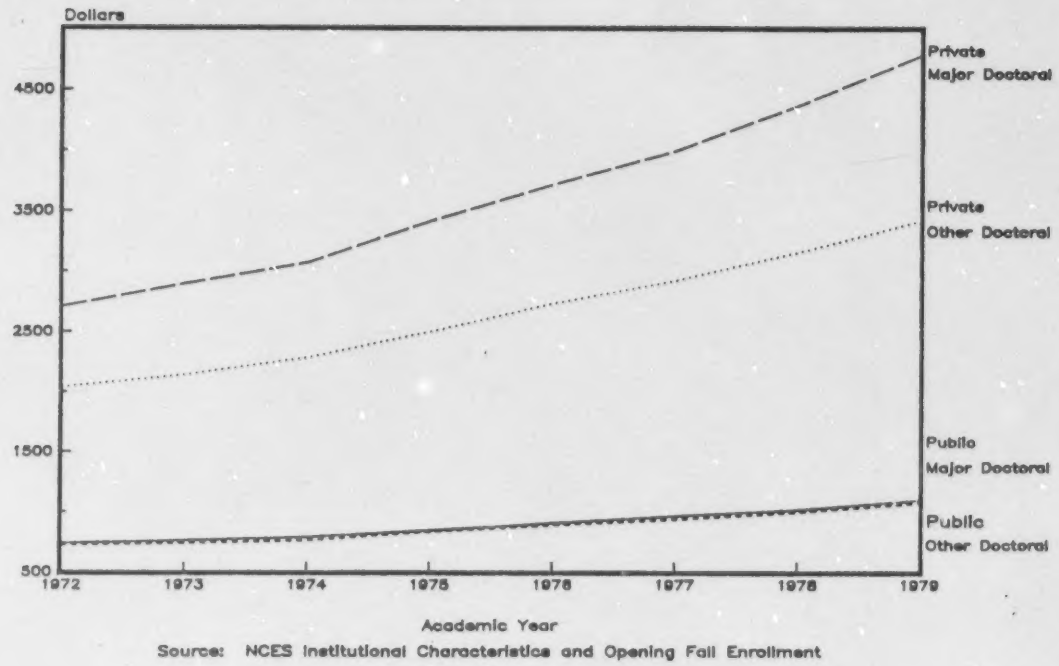


Fig. 14. Tuition prices at doctorate-granting institutions, 1972-1979

Turning to charges for room and board among these doctorate-granting institutions, it is clear that prices at private, doctorate-granting institutions are increasing more rapidly than in the public sector. It is also clear that the resulting gap exceeds differences noted for public and private institutions overall. In 1979-80, the absolute dollar gap was $734 in major research institutions and $387 in other doctorate-granting institutions. Table 13 and figure 15 reflect these results. Students in a doctoral institution in 1979-80 were facing a price higher than their 1972-73 counterparts, on the average, by $572 (at public major research universities), by $507 (at other public doctoral institutions), by $945 (at private major research institutions), and by $792 (at other private doctoral institutions). Even if enrollment patterns were stabilized to 1979-80 attendance patterns, these price increases would be nearly the same.

Table 13

Average Room and Board Charges for Major Doctorate-Granting Institutions
(Base-Year Occupancy-Weighted Average In Parentheses)

	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
PUBLIC								
Major Doctoral	$1,075	$1,087	$1,186	$1,265	$1,337	$1,427	$1,518	$1,647
	(1,072)	(1,084)	(1,182)	(1,262)	(1,336)	(1,428)	(1,518)	
Other Doctoral	$1,113	$1,139	$1,217	$1,293	$1,367	$1,419	$1,485	$1,620
	(1,109)	(1,135)	(1,211)	(1,289)	(1,363)	(1,416)	(1,484)	
PRIVATE								
Major Research	$1,436	$1,515	$1,612	$1,749	$1,882	$2,036	$2,160	$2,381
	(1,429)	(1,510)	(1,609)	(1,743)	(1,867)	(2,020)	(2,158)	
Other Doctoral	$1,215	$1,277	$1,407	$1,527	$1,642	$1,730	$1,854	$2,007
	(1,228)	(1,286)	(1,410)	(1,528)	(1,638)	(1,728)	(1,857)	

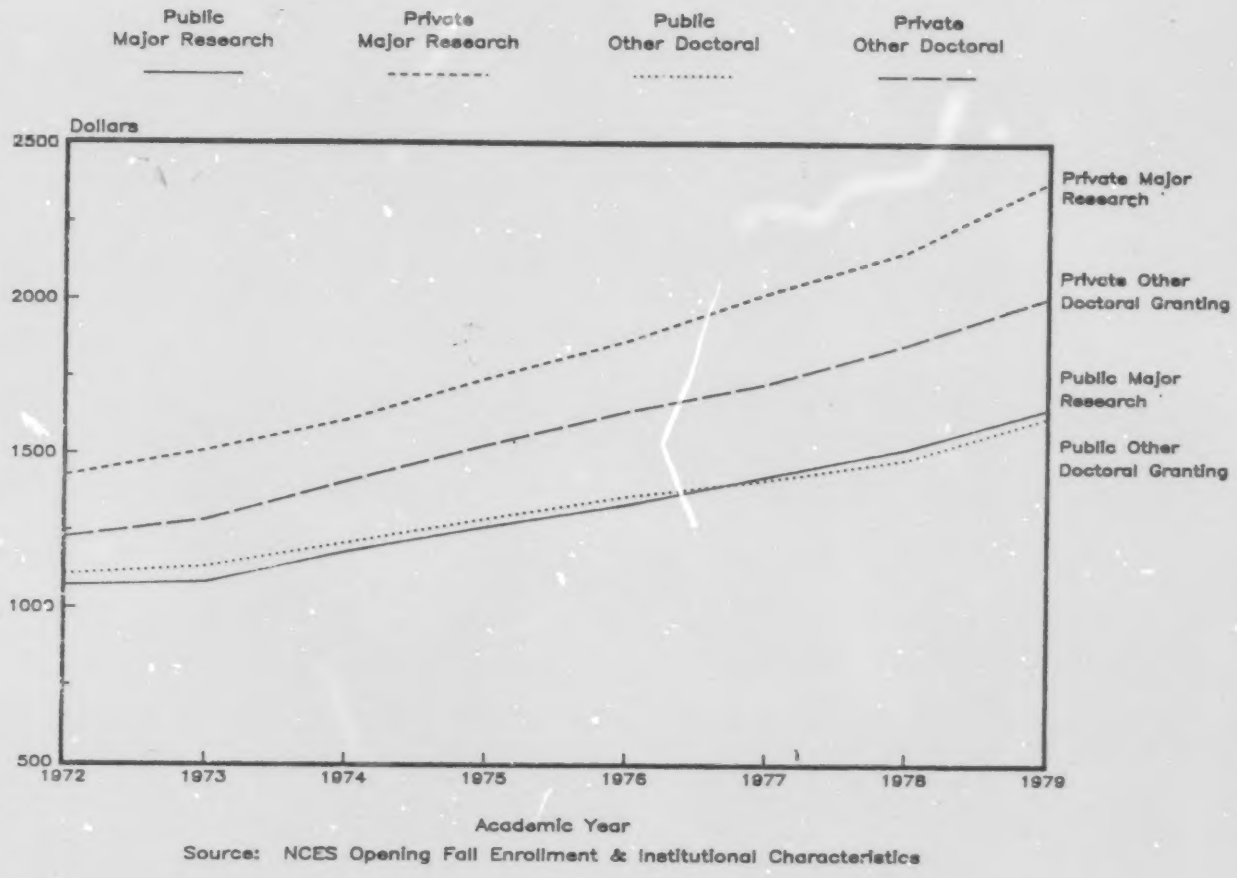


Fig. 15. Room and board charges at doctorate-granting institutions, 1972-1979

In summary and for those students living on doctorate-granting campuses, table 14 illustrates the trends in prices for tuition, room, and board from 1972-73 to 1979-80.

Table 14

Average Tuition, Room, and Board at Doctorate-Granting Institutions
(Base-Year Occupancy-Weighted Index in Parentheses)

	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
PUBLIC								
Major Research	$1,805 (1,801)	$1,832 (1,829)	$1,958 (1,952)	$2,080 (2,078)	$2,211 (2,211)	$2,366 (2,366)	$2,510 (2,510)	$2,718
Other Doctoral	$1,840 (1,842)	$1,884 (1,882)	$1,987 (1,983)	$2,130 (2,126)	$2,260 (2,256)	$2,366 (2,363)	$2,495 (2,495)	$2,714
PRIVATE								
Major Research	$4,212 (4,190)	$4,472 (4,449)	$4,756 (4,735)	$5,232 (5,208)	$5,679 (5,642)	$6,108 (6,072)	$6,612 (6,600)	$7,259
Other Doctoral	$3,479 (3,528)	$3,685 (3,705)	$3,989 (3,993)	$4,369 (4,373)	$4,773 (4,747)	$5,078 (5,070)	$5,479 (5,481)	$5,946

To counter the high-cost appearance of these institutions, we must note that university students are generally more affluent than students in other types of institutions. As figure 24 will show, entering university freshmen are more likely to come from families in the upper-income levels than their peers elsewhere in higher education.

Other Four-Year Institutions

This category is comprised of comprehensive institutions and general baccalaureate institutions. Comprehensive institutions as defined by Makowski and Wulfsberg (forthcoming) are

> characterized by a strong diverse post-baccalaureate program (including first professional), but do not engage in significant doctoral-level education. Specifically, this category includes institutions . . . in which the number of doctoral-level degrees granted is less than 30 or in which fewer than 3 doctoral-level programs are offered. In addition, these institutions grant a minimum of 30 post-baccalaureate degrees and either grant degrees in 3 or more post-baccaluareate programs, or, alternatively, have an interdisciplinary program at the post-baccaluareate level.

General baccalaureate institutions are defined as

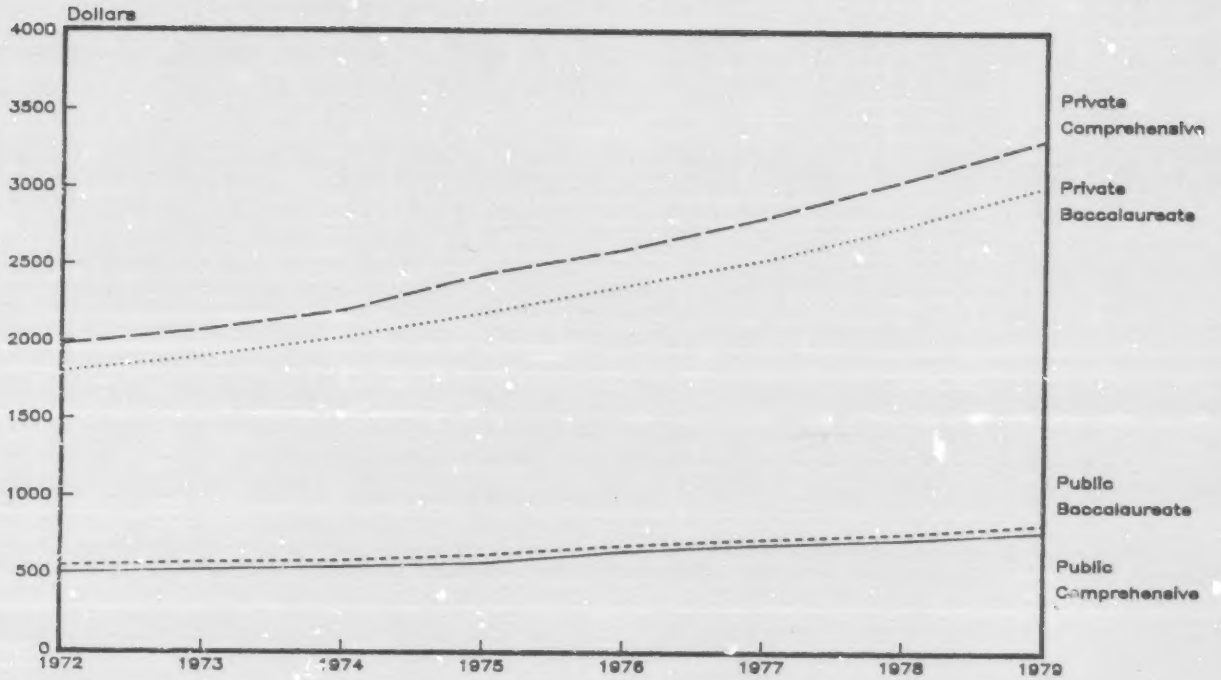
> characterized by their primary emphasis on general undergraduate, baccalaureate education. They are not significantly engaged in post-baccalaureate education. Included are institutions . . . in which the number of post-baccalaureate degrees granted is less than 30 or in which fewer than 3 post-baccalaureate level programs are offered, but which either (a) grant baccalaureate degrees and grant degrees in 3 or more baccalaureate programs, or (b) offer a baccalaureate program in interdisciplinary studies.

In the fall of 1979, students attending public comprehensive institutions were paying an average tuition of $773 (ranging between $169 and $1,440), $279 more than in 1972; their peers in private institutions were paying an average of $3,315 (between $1,296 and $5,745), or $1,310 more than in 1972. Among baccalaureate institutions, the findings point to a similar trend. Average per-student tuition charges rose by $278 in public institutions to $823 (ranging between $330 and $1,590); tuition charges rose by $1,152 to reach $3,013 (ranging from $137 to $6,590) in private institutions. The wide range of tuition prices reflects the variety of institutions represented in this large group. The tuition charged by the average institution differed from the tuition faced by the average student. For comprehensive institutions, the average list prices were $661 and $3,287 for public and private (contrasted with average per-student prices of $773 and $3,315 above); for baccalaureate institutions, the average list prices were $695 and $2,860 (contrasted with $823 and $3,013). These discrepancies suggest that the higher-priced institutions in these categories have higher enrollments than low-priced institutions; beyond this, however, the diversity represented here makes generalization difficult if not infeasible. Results are provided in table 15 and figure 16.

Table 15

Average Tuition for Other Four-Year Enrollments
(1979 Enrollment-Weighted Average in Parentheses)

PUBLIC	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
Comprehensive	$494 (499)	$513 (521)	$533 (542)	$561 (569)	$646 (644)	$692 (690)	$723 (723)	$773
Baccalaureate	$545 (547)	$570 (571)	$586 (585)	$621 (623)	$683 (684)	$728 (727)	$763 (762)	$823
PRIVATE								
Comprehensive	$2,005 (1,979)	$2,091 (2,074)	$2,212 (2,203)	$2,426 (2,436)	$2,596 (2,601)	$2,805 (2,807)	$3,060 (3,051)	$3,315
Baccalaureate	$1,861 (1,805)	$1,923 (1,901)	$2,042 (2,026)	$2,196 (2,187)	$2,368 (2,363)	$2,532 (2,533)	$2,757 (2,755)	$3,013



Source: NCES Institutional Characteristics and Opening Fall Enrollment

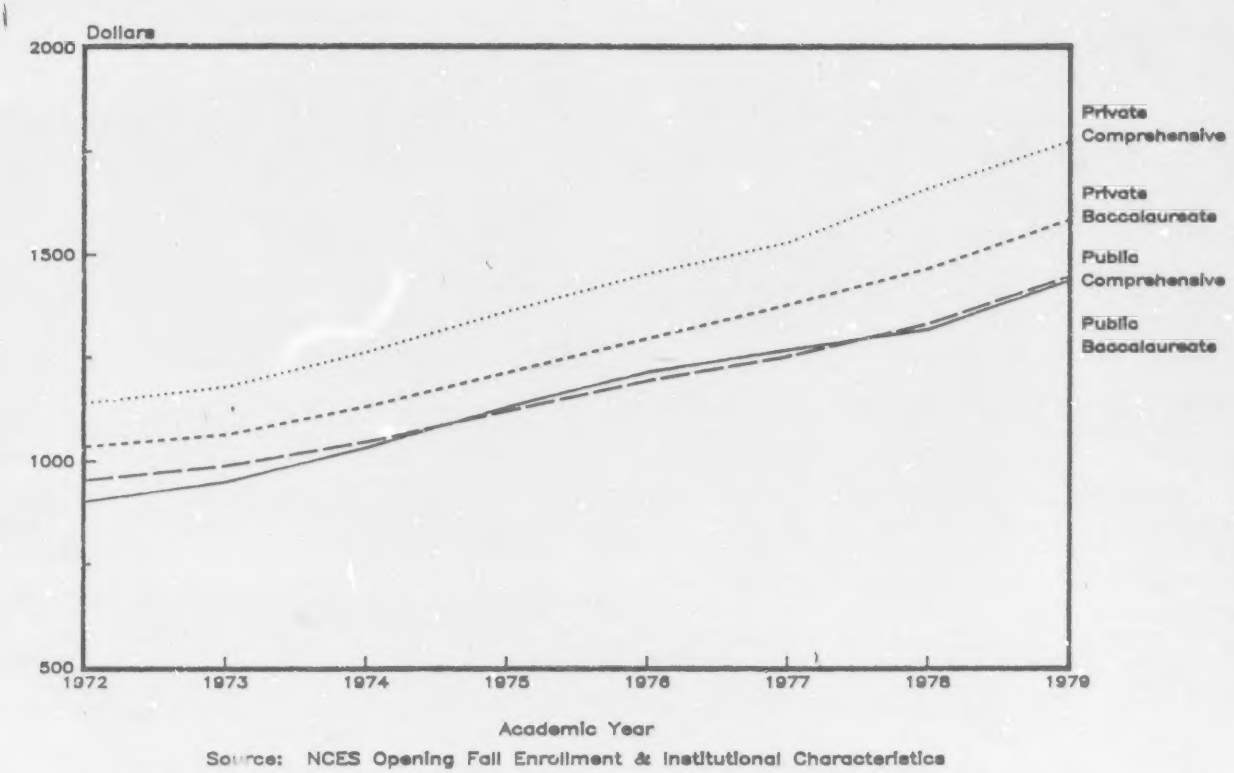
Fig. 16. Tuition prices at other four-year institutions, 1972-1979

Table 16 details the average charges for room and board per student observed at these institutions. Private institutions lead in price rises among comprehensive institutions and lag among baccalaureate institutions. Figure 17 better illustrates this pattern. A pattern that has been noted among doctoral institutions reappears here: just as enrollment changes have not substantially influenced average tuition price, and certainly not lessened its impact, so, too, charges for room and board have not been affected by changing patterns. Recalling from table 3 that 56 percent of all four-year enrollments in freshman and sophomore years live on campus, this price trend is notable.

Table 16

Room and Board Charges for Other Four-Year Institutions
(Base-Year Occupancy-Weighted Average in Parentheses)

	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
PUBLIC								
Comprehensive	$951 (954)	$988 (989)	$1,049 (1,047)	$1,123 (1,121)	$1,193 (1,193)	$1,251 (1,252)	$1,331 (1,332)	$1,446
Baccalaureate	$888 (902)	$947 (950)	$1,033 (1,033)	$1,126 (1,131)	$1,208 (1,214)	$1,264 (1,268)	$1,316 (1,318)	$1,436
PRIVATE								
Comprehensive	$1,138 (1,140)	$1,178 (1,179)	$1,262 (1,263)	$1,361 (1,362)	$1,453 (1,454)	$1,531 (1,530)	$1,560 (1,659)	$1,773
Baccalaureate	$1,034 (1,035)	$1,063 (1,064)	$1,128 (1,132)	$1,210 (1,213)	$1,293 (1,296)	$1,374 (1,378)	$1,465 (1,466)	$1,583



Source: NCES Opening Fall Enrollment & Institutional Characteristics

Fig. 17. Room and board charges at other four-year institutions, 1972-1979

A consideration of all costs for students living on campus shows that students at public institutions pay less than half for tuition, room, and board what their counterparts at private institutions pay. Table 17 presents these findings.

Table 17

Average Tuition, Room, and Board for Other Four-Year Institutions
(Occupancy-Weighted Averages in Parentheses)

	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
PUBLIC								
Comprehensive	$1,510	$1,575	$1,658	$1,758	$1,882	$1,991	$2,102	$2,267
	(1,513)	(1,575)	(1,654)	(1,755)	(1,878)	(1,991)	(2,102)	
Baccalaureate	$1,487	$1,574	$1,682	$1,815	$1,939	$2,032	$2,125	$2,306
	(1,503)	(1,578)	(1,679)	(1,819)	(1,944)	(2,033)	(2,127)	
PRIVATE								
Comprehensive	$3,159	$3,295	$3,506	$3,825	$4,105	$4,396	$4,793	$5,150
	(3,145)	(3,275)	(3,498)	(3,819)	(4,101)	(4,390)	(4,777)	
Baccalaureate	$2,930	$3,058	$3,248	$3,492	$3,758	$4,012	$4,340	$4,728
	(2,914)	(3,041)	(3,237)	(3,489)	(3,757)	(4,018)	(4,337)	

Professional and Specialized Institutions

Data for professional and specialized institutions are perhaps the least reliable and most unpatterned. These institutions form, in many senses, the least homogeneous group. They are defined as

> baccalaureate or post-baccalaureate institutions that are characterized by a programmatic emphasis in one area, usually a professional field such as business or engineering. The programmatic emphasis is measured by the percentage of degrees granted in one program area. An institution granting over 60% of its degrees in one field, or granting over half of its degrees in one field and granting degrees in fewer than 5 baccalaureate programs is considered to be a professional or specialized institution [Makowski and Wulfsberg forthcoming]

This category includes divinity institutions; medical institutions; other health institutions; engineering schools; business and management schools; art, music and design schools; law schools; and education schools.

Among public institutions, the increase in average per-student tuition over 1972-73 was $418, yielding an average price of $1,006 in the fall of 1979-80. However, these prices ranged from $114 to $1,570. For private institutions, this increase was $1,110, resulting in an average tuition per student in the fall of 1979 of $2,632. Here, the range is even greater than for public institutions, spanning tuitions from zero to $4,610. Not surprisingly, given the unique nature of these schools, changing enrollment patterns inflated the average price faced by students in these institutions. Changes are depicted in table 18 and figure 18.

Table 18

Average Tuition for Specialized and Professional Institutions
(Base-Year Enrollment-Weighted Averages in Parentheses)

	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
PUBLIC	$588 (581)	$607 (603)	$620 (621)	$649 (650)	$820 (817)	$862 (860)	$928 (918)	$1,006
PRIVATE	$1,522 (1,557)	$1,621 (1,664)	$1,731 (1,786)	$1,859 (1,937)	$1,996 (2,048)	$2,162 (2,198)	$2,388 (2,389)	$2,632

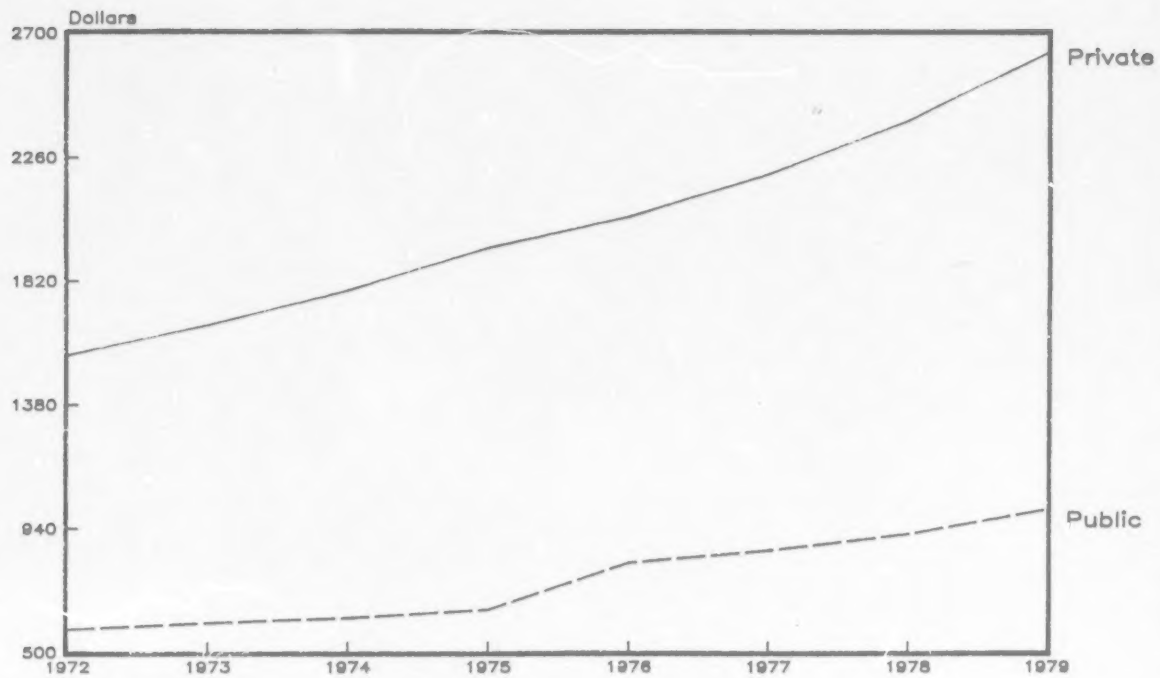


Fig. 18. Tuition prices at specialized and professional institutions, 1972-1979

In evaluating room and board charges and price increases, it should be remembered that only 30 specialized and professional public schools are considered here. Table 19 and figure 19 detail results for room and board charges at both public and private specialized and professional schools.

Table 19

Average Room and Board for Specialized and Professional Enrollments
(Base-Year Occupancy-Weighted Average in Parentheses)

	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
PUBLIC	$979	$1,022	$1,061	$1,159	$1,275	$1,318	$1,435	$1,552
	(993)	(1,032)	(1,074)	(1,174)	(1,283)	(1,328)	(1,440)	
PRIVATE	$1,059	$1,098	$1,184	$1,286	$1,377	$1,486	$1,574	$1,712
	(1,081)	(1,120)	(1,210)	(1,307)	(1,399)	(1,502)	(1,582)	

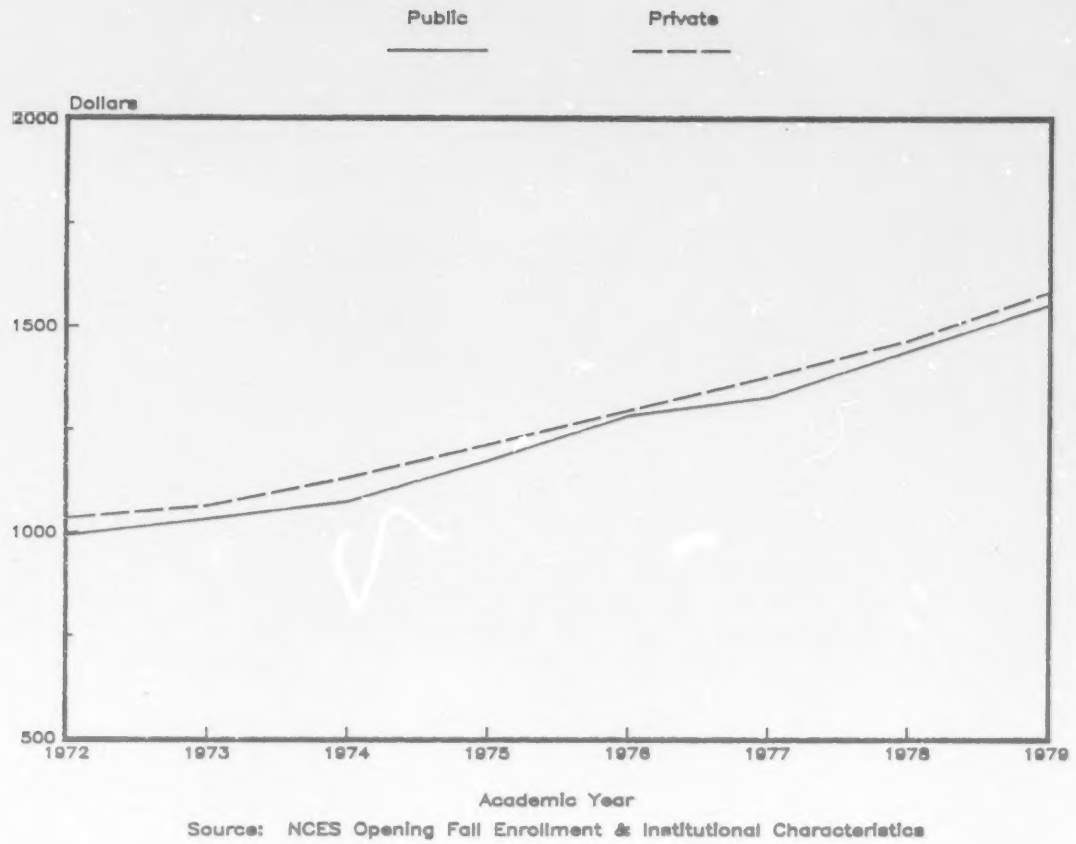


Fig. 19. Room and board charges at specialized and professional institutions, 1972-1979

Finally, the combined prices faced by students living on campus at specialized and professional institutions show, as table 20 illustrates, that students faced a package price for room, board, and tuition of $2,565 in public institutions and $4,335 in private institutions during 1979. These prices were increasing at approximately equivalent rates for public and private institutions.

Table 20

Average Tuition, Room, and Board for Specialized and Professional Enrollments
(Occupancy-Weighted Average in Parentheses)

	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
PUBLIC	$1,575	$1,641	$1,710	$1,831	$2,106	$2,178	$2,383	$2,565
	(1,601)	(1,662)	(1,724)	(1,854)	(2,112)	(2,188)	(2,373)	
PRIVATE	$2,565	$2,709	$2,923	$3,147	$3,377	$3,657	$3,947	$4,335
	(2,622)	(2,773)	(2,992)	(3,225)	(3,451)	(3,717)	(3,969)	

Two-Year Institutions

Two-year institutions are

> institutions which confer fewer than 25% of their degrees at the baccalaureate or post-baccalaureate level, and confer over 75% of their degrees or awards for two years of work, or formal awards and completions requiring less than two years of work. Institutions with a two-year upper division program would not fall in this category because they grant baccalaureate degrees. [Makowski and Wulfsberg forthcoming]

Due to the diversity of two-year institutions, this category is divided into three components:

Comprehensive Two-Year Institutions - Institutions in which the number of degrees awarded in occupational and vocational areas is greater than 20% but less than 80% of all degrees awarded.

Academic Two-Year Institutions - Institutions in which the number of degrees awarded in the academic area . . . is at least 80% of all degrees awarded.

Multiprogram Occupational Two-Year Institutions - Institutions which confer degrees or awards in two or more occupational programs and which grant less than 20% of their degrees in the academic area. [Makowski and Wulfsberg forthcoming]

Two-year institutions, like professional and specialized schools, reflect considerable variability. This variability is accentuated in figure 20. Although these trends are important, as table 4 illustrated, a number of two-year institutions are not considered in this series. Unless these excluded institutions behave similarly to the institutions considered here, our conclusions regarding two-year institutions must be viewed as applicable to only a subset of currently existing two-year colleges and the enrollments they represent.

As table 21 reflects, comprehensive two-year institutions show average per-student tuition increases of $157 and $700 among public and private institutions, respectively. Thus in 1979-80, students attending public institutions were facing an average price of $421 and a range from zero to $1,400; students attending private institutions were facing an average price of $1,821, ranging from $575 to $4,032. Interestingly, although not surprisingly, the average public institution was charging $378 and the average private institution was charging $2,062--implying that while public comprehensive two-year enrollments are more concentrated in schools more expensive than average, the reverse is true among private enrollments. As displayed in figure 20, academic two-year institutions experienced similar increases. Among public schools, the average per-student price was $540 in 1979-80 (ranging up to $1,704), or $156 more than in 1972-73. Among private schools, this increase amounted to $803, translating to a 1979-80 average price of $2,024 and a range from $675 to $4,466. We find that in both public and private academic two-year institutions, more students are enrolled in institutions with higher-than-average prices than with below-average prices. (The average list prices for this type of institution were $478 and $1,844 for public and private.) Two-year occupational schools, which acquired considerable popularity during this period, experienced average tuition increases of $156 and $937 for public and private. As a result of these increases, the average price of attendance at these institutions in 1979-80 was $580 for public (between $13 and $1,450) and $2,393 (between zero and $4,550) for private institutions. In this category, we find that public and private students were enrolled in greater numbers at schools

more expensive than the average. The average prices charged by institutions were $471 and $2,250 for public and private.) This price movement is apparent in figure 20 as well.

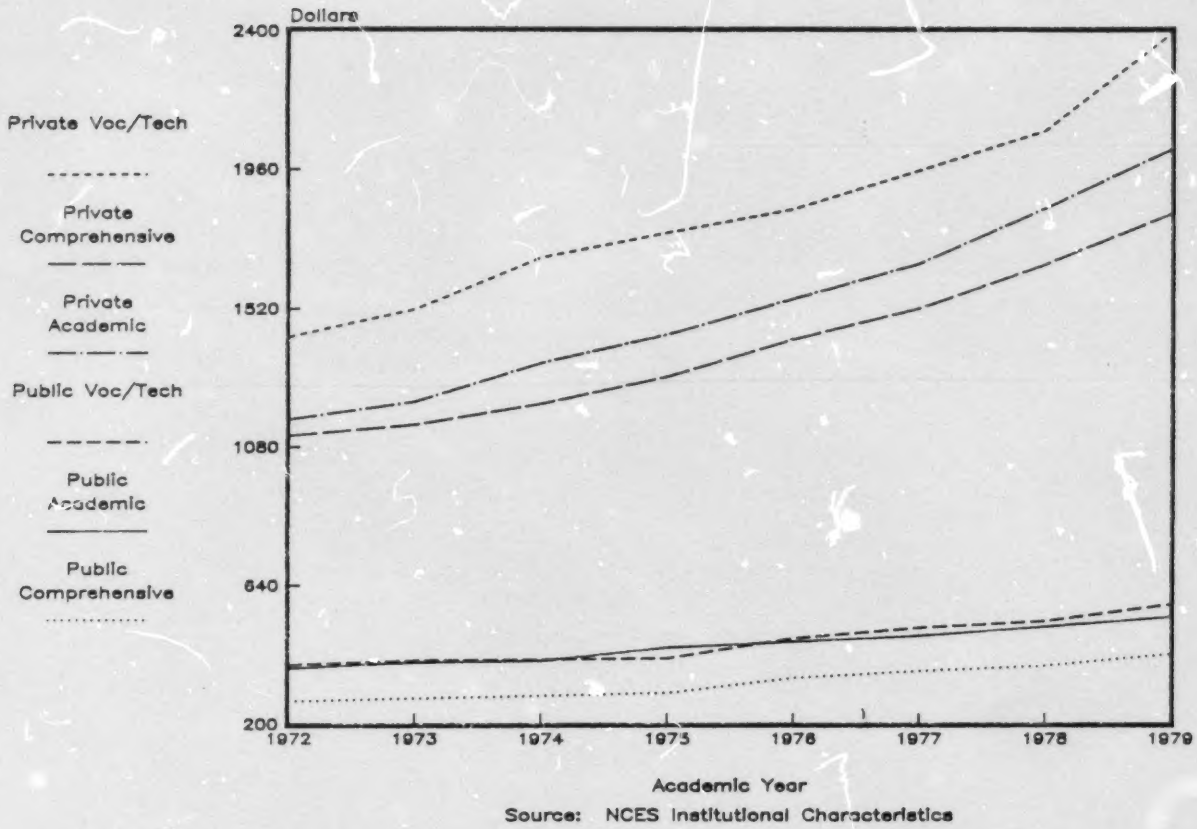


Fig. 20. Tuition prices at two-year institutions, 1972-1979

Table 21

Average Tuition for Two-Year Enrollments
(1979 Enrollment-Weighted Average in Parentheses)

PUBLIC	1972	1973	1974	1975	1976	1977	1978	1979
Two-Year Comprehensive	$264 (272)	$310 (282)	$276 (290)	$289 (299)	$332 (346)	$357 (368)	$382 (384)	$421
Two-Year Academic	$384 (375)	$402 (395)	$400 (400)	$427 (442)	$457 (461)	$477 (480)	$505 (509)	$540
Two-Year Occupational	$424 (386)	$407 (401)	$404 (404)	$394 (408)	$458 (472)	$501 (506)	$525 (527)	$580
PRIVATE								
Two-Year Comprehensive	$1,121 (1,115)	$1,160 (1,150)	$1,195 (1,216)	$1,254 (1,303)	$1,406 (1,420)	$1,509 (1,520)	$1,659 (1,659)	$1,821
Two-Year Academic	$1,221 (1,167)	$1,215 (1,223)	$1,328 (1,346)	$1,394 (1,436)	$1,518 (1,550)	$1,655 (1,661)	$1,836 (1,837)	$2,024
Two-Year Occupational	$1,456 (1,430)	$1,525 (1,518)	$1,637 (1,680)	$1,735 (1,760)	$1,809 (1,834)	$1,928 (1,956)	$2,064 (2,083)	$2,393

Turning attention to charges for room and board among these institutions discloses some surprising evidence. What students in public two-year institutions may save in tuition is being quickly eroded by increasing charges for room and board. Thus, for example, public two-year occupational institutions lead all public institutions in charges for room and board. Further, public two-year academic institutions are increasing prices more rapidly than other types of public institutions. This, of course, may be a function of the low demand for two-year institutional housing. As we recall from table 3, only 6 percent of two-year enrollments live on campus. Table 22 details these average charges and figure 21 further illustrates the rapid increase.

Table 22

Average Room and Board Charges for Two-Year Enrollments
(Base-Year Occupancy-Weighted Average in Parentheses)

	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
PUBLIC								
Two-Year Comprehensive	$796 (804)	$823 (821)	$882 (880)	$983 (983)	$1,047 (1,046)	$1,111 (1,107)	$1,176 (1,176)	$1,293
Two-Year Academic	$729 (726)	$791 (795)	$887 (897)	$964 (960)	$1,026 (1,029)	$1,120 (1,103)	$1,204 (1,197)	$1,262
Two-Year Occupational	$1,224 (1,202)	$1,241 (1,244)	$1,277 (1,261)	$1,353 (1,354)	$1,500 (1,501)	$1,544 (1,547)	$1,556 (1,556)	$1,688
PRIVATE								
Two-Year Comprehensive	$1,070 (1,093)	$1,104 (1,120)	$1,181 (1,203)	$1,244 (1,285)	$1,349 (1,367)	$1,433 (1,435)	$1,503 (1,511)	$1,628
Two-Year Academic	$930 (918)	$956 (950)	$1,035 (1,029)	$1,091 (1,094)	$1,177 (1,185)	$1,251 (1,256)	$1,363 (1,370)	$1,475
Two-Year Occupational	$1,330 (1,382)	$1,338 (1,400)	$1,403 (1,491)	$1,509 (1,522)	$1,579 (1,587)	$1,616 (1,640)	$1,667 (1,691)	$1,795

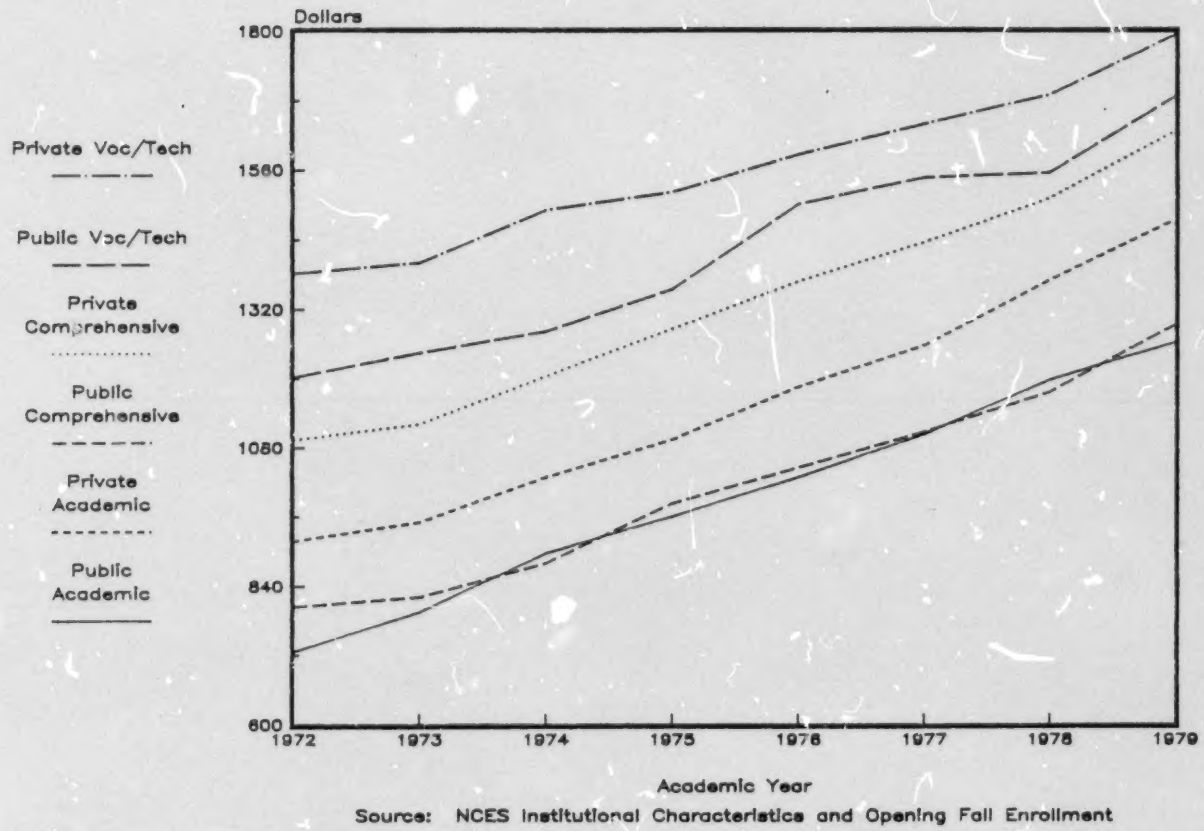


Fig. 21. Room and board charges at two-year institutions, 1972-1979

Combining these charges, the average student living on campus paid between $1,759 and $5,180 for room, board, and tuition at a two-year institution in 1979-80. Interestingly, the gap between public and private prices is growing only among occupational schools. These findings are documented in table 23.

Table 23

Average Tuition, Room, and Board at Two-Year Institutions
(Base-Year Occupancy-Weighted Index in Parentheses)

	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
PUBLIC								
Comprehensive	$1,116	$1,166	$1,242	$1,348	$1,444	$1,523	$1,612	$1,759
	(1,141)	(1,171)	(1,245)	(1,358)	(1,448)	(1,525)	(1,613)	
Academic	$1,198	$1,350	$1,461	$1,507	$1,652	$1,745	$1,884	$1,980
	(1,211)	(1,345)	(1,467)	(1,548)	(1,670)	(1,773)	(1,894)	
Occupational	$1,958	$1,975	$2,015	$2,094	$2,314	$2,392	$2,422	$2,679
	(1,916)	(1,980)	(2,020)	(2,093)	(2,314)	(2,400)	(2,427)	
PRIVATE								
Comprehensive	$2,298	$2,399	$2,525	$2,657	$2,923	$3,111	$3,381	$3,648
	(2,321)	(2,390)	(2,540)	(2,724)	(2,949)	(3,125)	(3,378)	
Academic	$2,199	$2,279	$2,474	$2,601	$2,793	$3,004	$3,309	$3,626
	(2,176)	(2,260)	(2,465)	(2,626)	(2,836)	(3,016)	(3,320)	
Occupational	$2,882	$2,975	$3,175	$3,364	$3,525	$3,698	$3,911	$4,256
	(2,920)	(3,006)	(3,272)	(3,386)	(3,528)	(3,723)	(3,926)	

4. Concluding Remarks

A. The Context for Interpretation

In large measure, public concern about the increasing price of higher education has been overridden by the wide availability of financial aid. We have been confident that the economic plight of the student has been ameliorated by the fact that the prices fixed by institutions for tuition, room, and board were not necessarily the actual or immediate costs to the student. Financial aid constitutes the difference between list price (measured by PTRB indicators) and the cost of education to the student (exclusive of foregone earnings). Indeed, nearly half of all freshmen receive some form of financial assistance from federal, state, or private sources (American Council on Education 1979). This circumstance has led to converse claims in the Wall Street Journal--that financial aid has created the affluent student (Buss 1980), and that it has elevated the middle-income squeeze to an upper-income crunch (Flanagan 1980). And indeed, PTRB indicators show that from 1972-73 to 1979-80 prices did not increase as rapidly as financial aid. For example, from 1973 to 1976, the average Basic Educational Opportunity Grant (BEOG) award grew from $269 to $852, or 217 percent, while tuition, room, and board prices rose during the same period by 33 percent at private and 27 percent at public institutions. At the same time, only 69 percent of qualified applicants received BEOG awards in 1973, as compared to 78 percent in 1977. Ceilings on these awards rose from $452 in 1973 to $1,400 in 1977 (U.S. Department of Health, Education, and Welfare 1979b). With the exception of federally guaranteed student loans, however, the trends in financial assistance to incoming freshmen have not shifted sharply since 1974, as figure 22 indicates. Among some groups (such as state-scholarship recipients), the percent of entering students receiving aid has actually declined. Furthermore, a recent survey of college students found that despite the extent of aid, one out of five respondents claimed to have severe financial problems (Crossley Surveys 1980, p. 2). The effectiveness of this widespread financial aid in eradicating price barriers to higher education is moot, therefore. As figure

23 indicates, extent of higher-education participation remains a major difference between the rich and the poor. Moreover, the conflict of price and access looms larger in a future of threatened financial-aid sources.

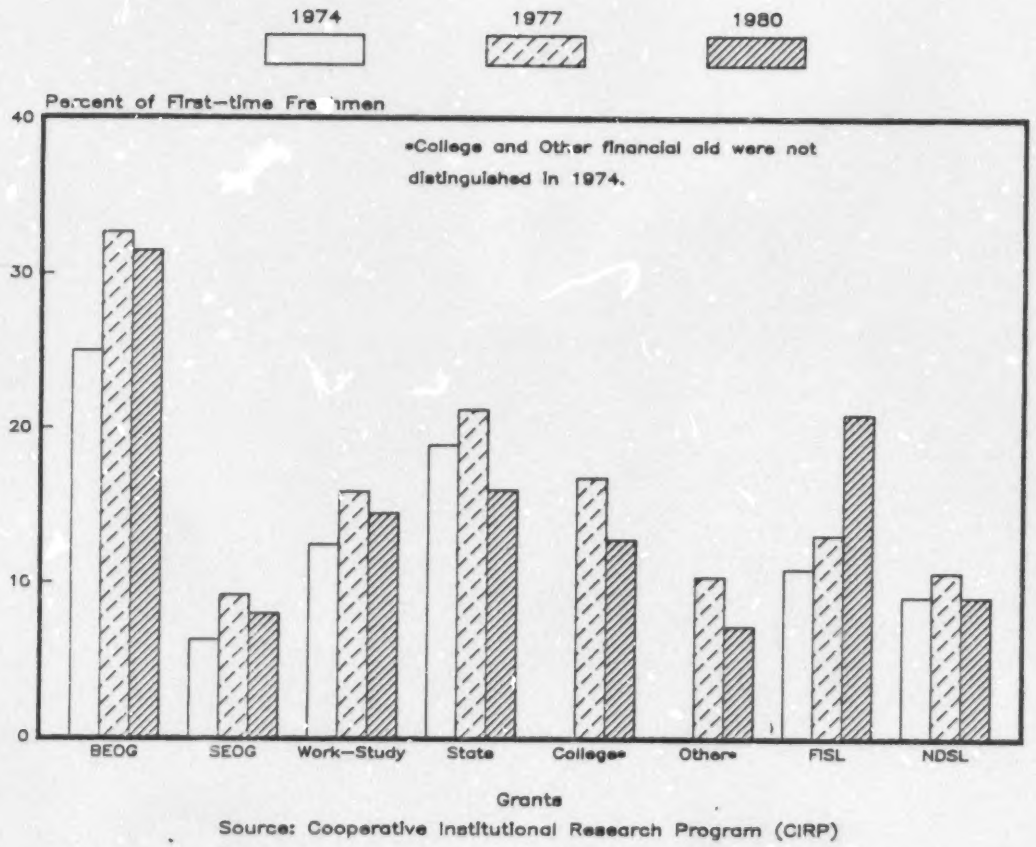
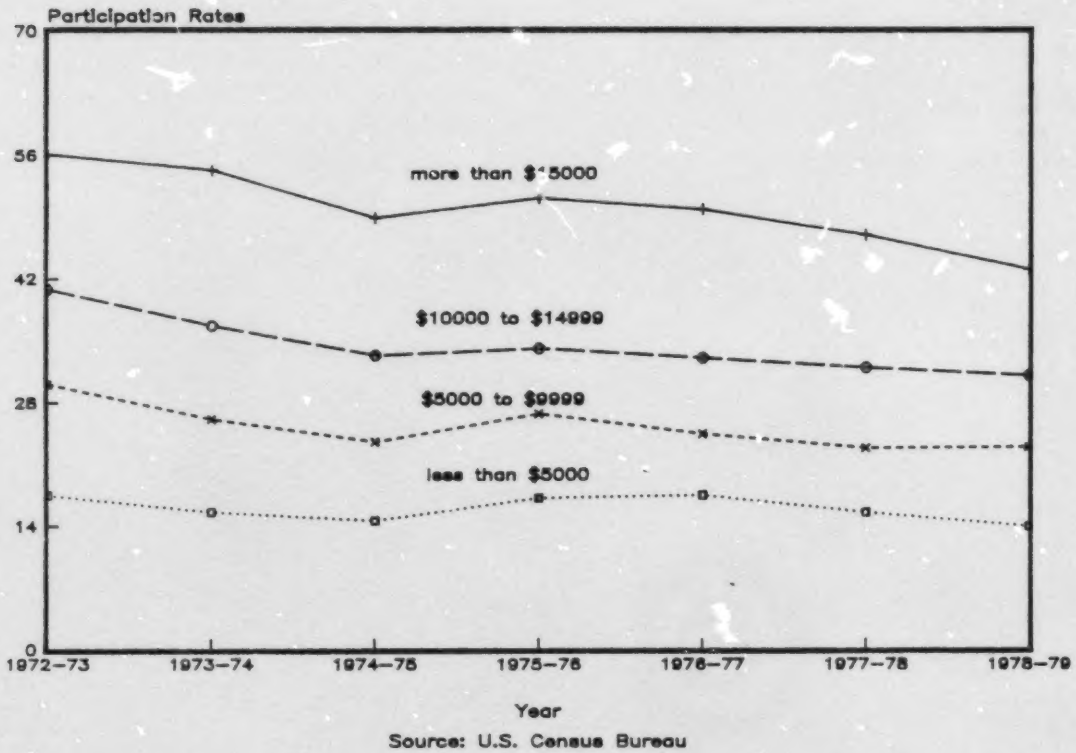


Fig. 22. Percent of First-time freshmen receiving financial aid



Source: U.S. Census Bureau

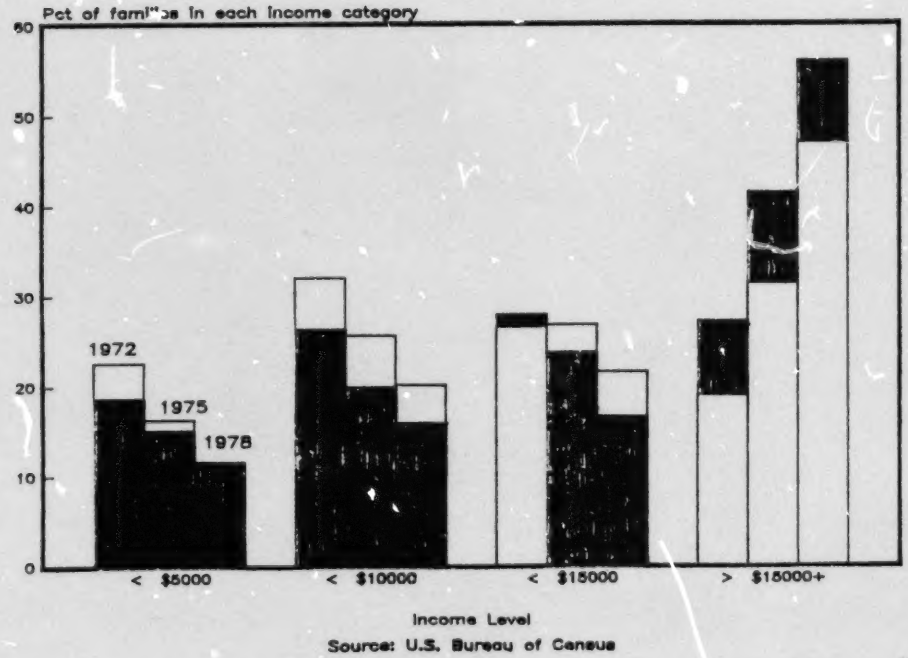
Fig. 23. Participation rates: 18-24 year olds by family-income groups

Considerations of increasing prices and availability of financial aid aside, the affordability of college to the middle class would still be at issue. The sharp upward spiral of inflation has intensified public concern about family finances. The rising cost of necessities such as housing, fuel, and food has eroded the savings capacity of the middle class, presumably hampering the ability of parents to defray college costs. Personal savings declined from 7.8 percent of disposable personal income in 1973 to 5.3 percent in 1978; at the same time, consumer interest payments rose from 2.2 to 2.5 percent of disposable personal income (U.S. Department of Commerce, Bureau of Census, 1979c, p. 443). Moreover, changes in family structure have placed greater economic pressure on parents.

One source of this pressure is the emergence of the so-called sibling squeeze among college-age youth (Carroll and Morrison 1976). One-third of the entering freshman class of 1980 had siblings still in college and dependent upon parental income (Astin, King, and Richardson, n.d., p. 48). Of those in the current college-age population (born between 1960 and 1964) who have one older sibling, 80 percent are less than four years younger and nearly 50 percent are less than two years younger than that sibling (U.S. Department of Commerce, Bureau of Census, 1980, p. 105).

A more generalized difficulty is that the cost of raising children jumped by one-third during the three years following 1977. By 1980, parents with disposable income of between $14,000 and $18,000 were spending an average of $58,200 to rear a child from birth through college; parents with disposable income of between $22,500 and $27,000 were spending an estimated average of $85,200 (Espenshade 1980). At the turn of the decade, then, the typical American family could expect to dedicate nearly four years of disposable family income to the raising of each child. Thus while disposable personal income rose in the late 1970s at a rate faster than tuition and other college costs, the ability of parents to provide a college education for offspring still diminished. Moreover, consumer prices have risen since 1980 at a rate above that of the income of American workers (Borum 1981). Current needs therefore may

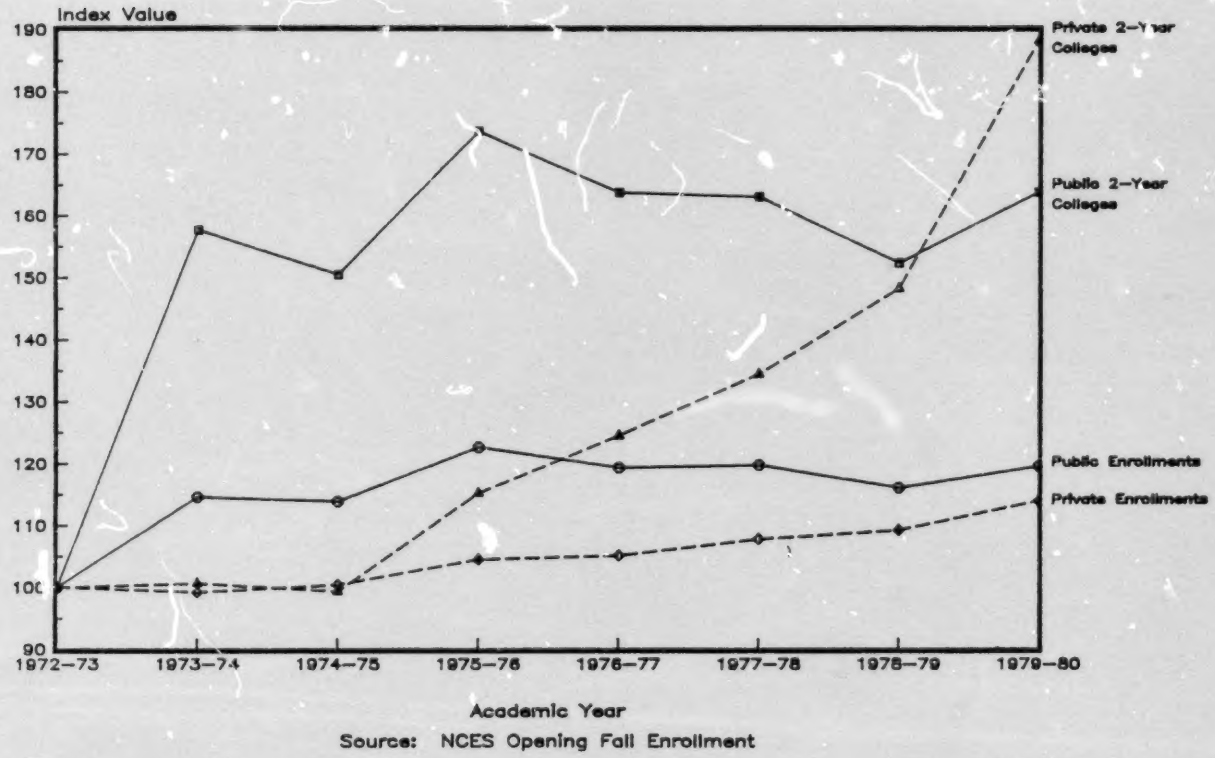
well exceed the long-range financial requirements of providing a college education to children. Families (defined as a group of two or more persons related by blood, marriage, or adoption and residing together) with college-age members remain generally more affluent than other families (measured in terms of total money income before taxes, as depicted in figure 24 (albeit the disparity may be waning). Nonetheless, the deterioration of economic capacity caused by rising prices and interest rates may render many such families unable to fully finance their children's college education. The rise of the single-parent home, in which money typically is scarcer across all socioeconomic classes, also must be taken into account.



Shaded areas = College Families

Fig. 24. Family income. A comparison of families with college-age (18-24 years) members and all families

The situation might seem to be ameliorated by the new wave of enrollments in two-year institutions, which has exerted a downward influence on average PTRR statistics. As figure 25 portrays, this growth in the two-year sector has far exceeded the 15 percent growth experienced in higher education generally. Moreover, and as affirmed in figure 26, this growth has meant considerable change in the distribution of enrollments across institutions from 1972-73 to 1979-80. Yet we must keep in mind that two-year college students are less affluent than their peers in other types of institutions (figure 27). The rapid rise in prices at two-year colleges therefore may constitute a barrier to access for these students quite as high as the price barriers confronted by more affluent students at more expensive schools.



Source: NCES Opening Fall Enrollment

Fig. 25. Growth patterns of full-time enrollment in higher education, 1972–1979

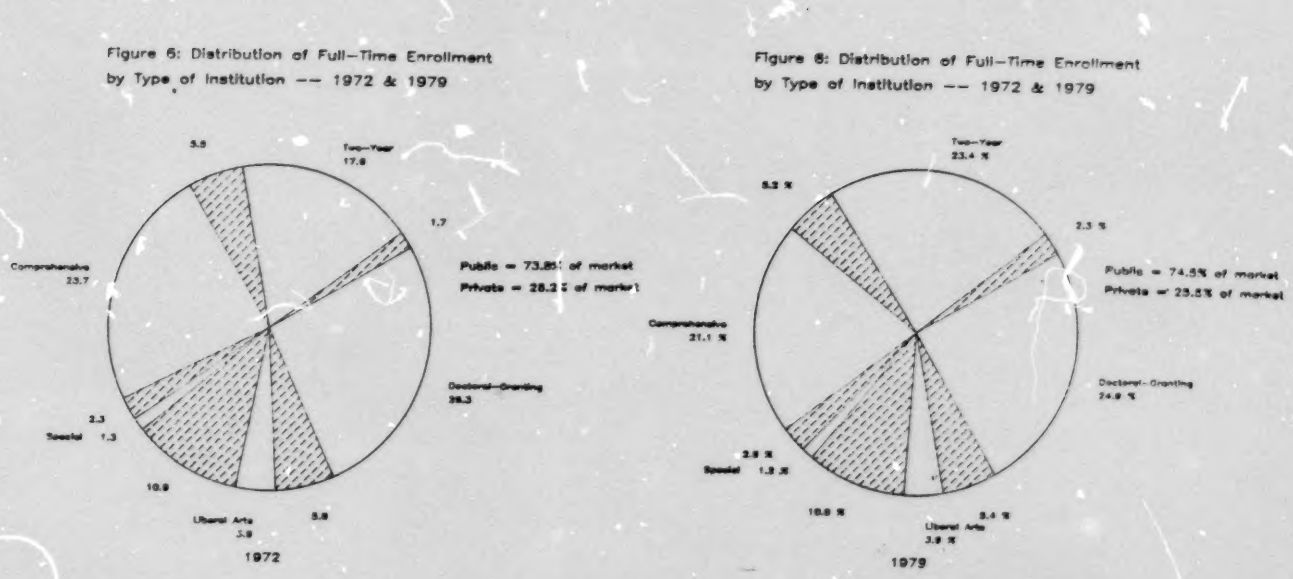


Fig. 26. Distribution of full-time enrollment by type of institution. Left, 1972; right, 1979.

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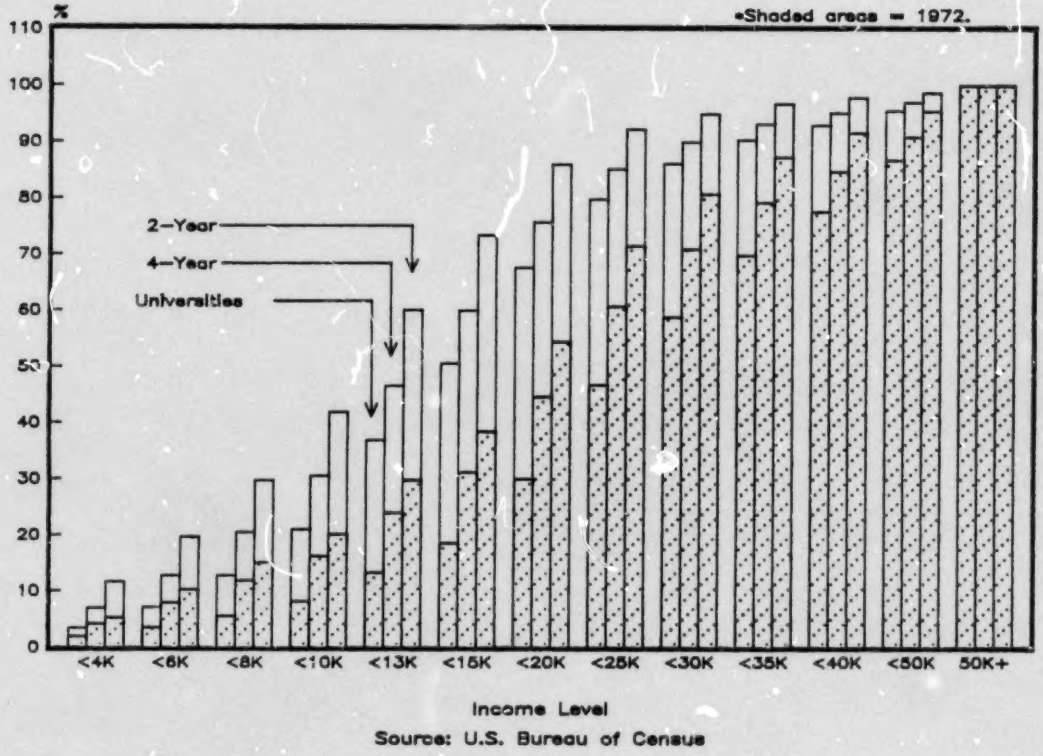


Fig. 27. Cumulative distribution of two-year, four-year, and university students by family income, 1972 and 1979

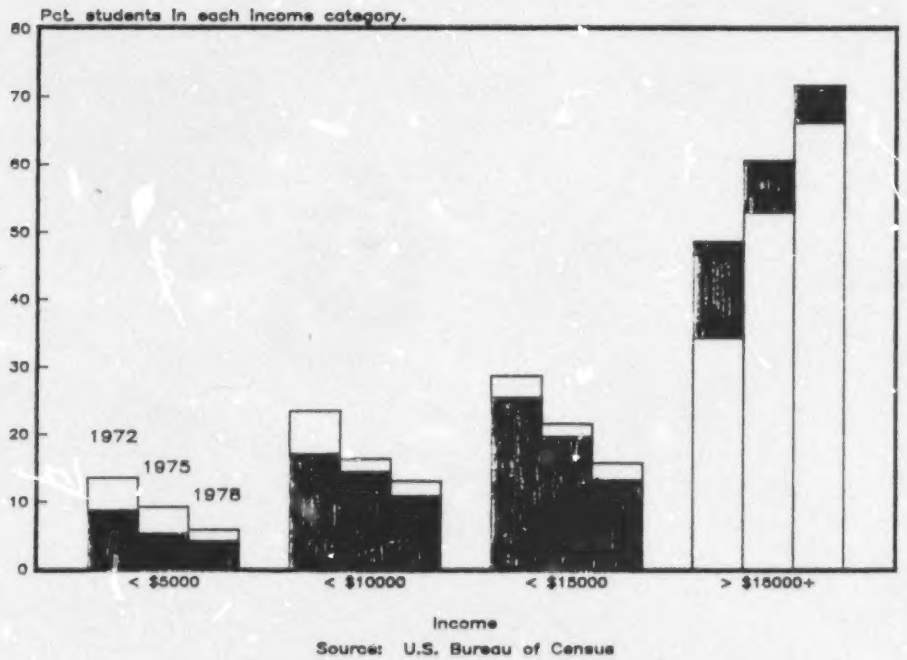
From an institutional perspective, questions of price, financial aid, and student choice must be considered jointly. The recent parallel movement of public-institution tuition prices and the Higher Education Price Index (see figure 1) may reflect a growing trend in this sector to relate tuition to the cost of instruction. This would effectively increase the importance of tuition as a revenue source for public institutions. As Chambers (1978) observes, tuition revenues at public universities accounted for 16.7 percent of educational and general expenditures in 1975, as compared to 13.2 percent a decade earlier. By contrast, however, McCoy and Halstead (1979, p. 39) found that tuition revenues in public institutions accounted for 17 percent of education and general revenues in fiscal year 1972 but only 16 percent in 1976. Meanwhile, state and local appropriations grew from 58 percent of institutional income to 60 percent. Indeed, a growing dependence upon state appropriations has been documented among leading public research universities ("Dependency of Leading Research Institutions on Federal Funding," 1980, p. A-11). However, as federal and state financial commitments change, any reduction or stagnation of the availability of financial aid could seriously jeopardize those schools that depend upon students from the middle-income and lower-income groups. From fiscal year 1967 to 1975, federal student aid increased more than fourfold—twice the increase in the cost of attendance (Carlson 1978, p. 5). It is difficult to determine motivation for the specific pricing policies of institutions beyond the need to meet increased costs in a time of high inflation. But surely the prospect of augmenting student resources by financial aid has played at least a limited role in such pricing decisions. By enlarging the purchasing power of the student, in other words, financial aid may have triggered offsetting increases in tuition. Dietch (1979) asserts that need-based financial aid has actually inhibited price competition among institutions. Hyde (1975) contends that the Supplemental Education Opportunity Grant (SEOG) formula contained incentives for institutional price increases. Chase (1980, p. 93) also argues that federal subsidies encourage rapid tuition increases. On the other hand, Brunner and Gladieux (1979, pp. 2, 22) suggest that the connection between

financial aid and tuition price is weak, at least among public institutions, and Carlson (1978) found that financial aid has substantially outrun tuition and cost increases. In any case, the impact of reduced financial aid on certain institutions and possible impact on tuition pricing needs to be considered.

PTRB indicators will inevitably be scrutinized for their significance to the burgeoning tuition-gap issue. The widening difference between the list tuition at public and private institutions--what McPherson (1978) has characterized as the "yawning tuition gap"--would be expected to be a strong factor pushing low- and middle-income students toward public institutions. Indeed, studies indicate that list price is critical to student decisionmaking and may play a much greater role in student choice than is usually supposed (Wattenbarger 1979; Litten, Brodigan, Sullivan, and Morris 1980). And as figure 28 shows, there is an income gap between public and private students: public institutions enroll proportionately more poor students and private institutions enroll proportionately more wealthy students.

It has been suggested that financial aid does reduce this disparity by making it easier for low- and middle-income students to attend private institutions. Although Tierney (1979, p. 26) contends that financial aid significantly affects middle-income students in the choice between public and private institutions, several other studies contradict that finding. Jackson and Weathersby (1975) contend that the financial aid necessary to impact choice ($3,000-5,000 in 1975) makes the feasibility of a concrete change in choice remote. Weathersby (1976b) asserts that prospective students cannot obtain sufficient information from institutions about available financial aid until late in the application process. This position is supported by the fact that one-third of the entering freshman class of 1979 was unaware of the Federal Guaranteed Student Loan Program (Astin, King, and Richardson n.d., pp. 57, 58). And PTRB indicators suggest that despite increases in amounts of and eligibility for financial aid, the proportion of students in more expensive schools has not changed. Overall

then, the evidence suggests that financial aid has not removed price barriers to the private sector, although it perhaps has reduced them.



Shaded areas = Private

Fig. 28. Distribution of public and private college students by family income

Along with a grim family-finance picture and changing financial-aid philosophy, rising prices are making it harder for students to attend colleges and universities. If these trends continue, our concept of universal access to higher education as a social and economic leveler may well suffer.

B. Prices and Policy

Until a comprehensive set of indicators is available, the interactions of prices, student financing, student participation, and institutional financing will remain largely speculative. We will continue, in the absence of adequate information, to adopt patchwork national policies for higher education, trying to repair undesirable conditions whose causes we do not understand and whose emergence we are unable to predict. As for the succession of policies that have been adopted, modified, and discarded, we cannot gauge their actual effects, intended or otherwise, with any precision. If, in fact, we were to define national policy for higher education in terms of the consequences that flow from policy implementation, we would have to say that no one knows what our national policy is. One of the very largest and quite possibly the most complex of our national enterprises, higher education is not easy to describe and always will be hard to understand. But it is not unfathomable. Important trends can be tracked by a manageable number of indicators, organized in interactive clusters.

We have emphasized that PTRB indicators provide information about only certain aspects of higher-education financing. Nonetheless, they call attention to the development of potentially harmful trends that may be associated with reduced federal financial aid to students. Three potential problems are particularly noteworthy:

- Rising tuition prices, especially at public institutions, may conflict with our social aspiration to promote access to higher education

- The widening public-private tuition gap may foreclose free institutional choice for significantly greater numbers of students

- The developing student-income gaps, reinforced by growing tuition disparities, may further polarize public vs. private and two-year vs. four-year enrollment patterns, thus promoting economic stratification in higher education

The American tradition of low tuition and sometimes no tuition, at public colleges and universities is perhaps the clearest sign of the national commitment to something approaching universal access to higher education. The pronounced increase in public-sector tuition prices documented by the PTRB indicators signals a departure from that tradition. Even at public two-year colleges, long the open door to higher education, tuition increases are accelerating. This has created no particular public alarm, apparently because federal financial aid to students has more than kept pace with the increases in tuition prices. The government's willingness to continue to keep financial aid ahead of pricing trends is now in question. Pricing is an institutional or state-level policy issue, particularly in the public sector, that should be addressed in light of revisions in federal policy on financial aid to students. During the seventies much of the burden of institutional support shifted from the federal government to the state. The responsibility for maintaining access may undergo a similar relocation in the eighties.

The unparalleled American effort to extend access did not confine public dollars to the public sector of higher education. We are the only major nation in the world with a strong, well dispersed, accessible network of private colleges and universities. Fully half of our most prestigious universities are independent: we regard them as bastions of excellence and diversity, against which the great public institutions measure themselves. The federal concept of financial aid has embraced the principle that the private sector can remain healthy only so long as students have a substantial measure of free choice. This has ensured that students from the middle and lower income levels could obtain a private education--and the

dependence of private institutions on this source of enrollment is not trivial. For all but the wealthiest institutions and those that draw enrollments principally from upper-income families, retrenchment in federal financial aid puts institutional vitality at risk. When student resources are curtailed, the difference in price between public and private institutions is no longer artificial. If access to private institutions attenuates for all but wealthy students and those of high academic ability, the survival of the private sector in anything like its present dimensions will be threatened. So also will be the American tradition that one is not born into a fixed place and course of life, dictated by economic status. Economic stratification of access that reserves private institutions for the monied or academic elite would contradict almost every expression of the national intent over the past 30 years. But trends are taking shape whose intersection could in fact bring about this unintended and inimical social condition.

It may be that the national objective of a college education for everyone capable of benefiting from it cannot be achieved solely through federal financial aid. It was perhaps naive for higher education to subscribe so warmly to a broad array of social commitments and values over the past three decades, placing blind trust in the perpetual availability of adequate public resources to meet all those commitments. Our colleges and universities may have acquired a perilous dependence on sources of support too closely tied to economic growth.

However that may be, we seem finally to have recognized that the future will not bestow the bounty of the past. It is time, we are told on every hand, to make hard choices. They will be best made on the basis of factual information. The indicators of the price of tuition, room, and board that have been presented in this report provide some small part of the information we need to make sure that higher education remains healthy and productive, from all perspectives. Many other indicators should be developed—and soon.

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